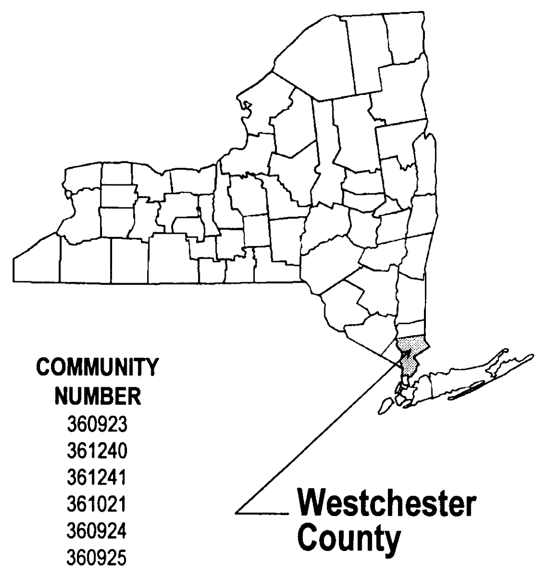
FLOOD INSURANCE STUDY

VOLUME 1 OF 3

WESTCHESTER COUNTY, NEW YORK
(ALL JURISDICTIONS)



COMMUNITY NAME	COMMUNITY NUMBER
ARDSLEY, VILLAGE OF	360902
BEDFORD, TOWN OF	360903
BRIARCLIFF MANOR, VILLAGE OF	360904
BRONXVILLE, VILLAGE OF	360905
BUCHANAN, VILLAGE OF	361534
CORTLANDT, TOWN OF	360906
CROTON-ON-HUDSON, VILLAGE OF	360907
DOBBS FERRY, VILLAGE OF	360908
EASTCHESTER, TOWN OF	360909
ELMSFORD, VILLAGE OF	360910
GREENBURGH, TOWN OF	360911
HARRISON, TOWN OF	360912
HASTINGS-ON-HUDSON, VILLAGE OF	360913
IRVINGTON, VILLAGE OF	360914
LARCHMONT, VILLAGE OF	360915
LEWISBORO, TOWN OF	361227
MAMARONECK, TOWN OF	360917
MAMARONECK, VILLAGE OF	360916
MOUNT KISCO, VILLAGE OF	360918
MOUNT PLEASANT, TOWN OF	360919
MOUNT VERNON, CITY OF	360920
NEW CASTLE, TOWN OF	360921
NEW ROCHELLE, CITY OF	360922

COMMUNITY NAME	COMMUNITY NUMBER
NORTH CASTLE, TOWN OF	360923
NORTH SALEM, TOWN OF	361240
OSSINING, TOWN OF	361241
OSSINING, VILLAGE OF	361021
PEEKSKILL, CITY OF	360924
PELHAM, VILLAGE OF	360925
PELHAM MANOR, VILLAGE OF	360926
PLEASANTVILLE, VILLAGE OF	360927
PORT CHESTER, VILLAGE OF	360928
POUND RIDGE, TOWN OF	360929
RYE, CITY OF	360931
RYE BROOK, VILLAGE OF	360930
SCARSDALE, VILLAGE OF	360932
SLEEPY HOLLOW, VILLAGE OF	361515
SOMERS, TOWN OF	361242
TARRYTOWN, VILLAGE OF	360933
TUCKAHOE, VILLAGE OF	360934
WHITE PLAINS, CITY OF	360935
YONKERS, CITY OF	360936
YORKTOWN, TOWN OF	360937

EFFECTIVE:
SEPTEMBER 28, 2007

Federal Emergency Management Agency

FLOOD INSURANCE STUDY NUMBER
36119CV001A

NOTICE TO
FLOOD INSURANCE STUDY USERS

Communities participating in the National Flood Insurance Program have established repositories of flood hazard data for floodplain management and flood insurance purposes. This Flood Insurance Study (FIS) may not contain all data available within the repository. It is advisable to contact the community repository for any additional data.

Part or all of this FIS may be revised and republished at any time. In addition, part of this FIS may be revised by the Letter of Map Revision process, which does not involve republication or redistribution of the FIS. It is, therefore, the responsibility of the user to consult with community officials and to check the community repository to obtain the most current FIS components.

Initial Countywide FIS Effective Date: September 28, 2007

Revised Countywide FIS Date:

TABLE OF CONTENTS – Volume 1

TABLE OF CONTENTS – Volume 1 - continued

TABLE OF CONTENTS – Volume 2

EXHIBITS - continued

TABLE OF CONTENTS – Volume 3

EXHIBITS - continued

FLOOD INSURANCE STUDY
WESTCHESTER COUNTY, NEW YORK (ALL JURISDICTIONS)

1.0 INTRODUCTION

1.1 Purpose of Study

This countywide Flood Insurance Study (FIS) investigates the existence and severity of flood hazards in, or revises and updates previous FISs/Flood Insurance Rate Maps (FIRMs) for the geographic area of Westchester County, New York, including: the Cities of Mount Vernon, New Rochelle, Peekskill, Rye, White Plains, and Yonkers; the Towns of Bedford, Cortlandt, Eastchester, Greenburgh, Harrison, Lewisboro, Mamaroneck, Mount Pleasant, New Castle, North Castle, North Salem, Ossining, Pound Ridge, Somers, and Yorktown; and the Villages of Ardsley, Briarcliff Manor, Bronxville, Buchanan, Croton-on-Hudson, Dobbs Ferry, Elmsford, Hastings-on-Hudson, Irvington, Larchmont, Mamaroneck, Mount Kisco, Ossining, Pelham, Pelham Manor, Pleasantville, Port Chester, Rye Brook, Scarsdale, Sleepy Hollow (formerly known as the Village of North Tarrytown), Tarrytown, and Tuckahoe (hereinafter referred to collectively as Westchester County).

This FIS aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This FIS has developed flood risk data for various areas of the county that will be used to establish actuarial flood insurance rates. This information will also be used by the communities of Westchester County to update existing floodplain regulations as part of the Regular Phase of the National Flood Insurance Program (NFIP), and will also be used by local and regional planners to further promote sound land use and floodplain development. Minimum floodplain management requirements for participation in the NFIP are set forth in the Code of Federal Regulations at 44 CFR, 60.3.

In some States or communities, floodplain management criteria or regulations may exist that are more restrictive or comprehensive than the minimum Federal requirements. In such cases, the more restrictive criteria take precedence and the State (or other jurisdictional agency) will be able to explain them.

1.2 Authority and Acknowledgments

The sources of authority for this FIS are the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973.

This FIS was prepared to incorporate the incorporated communities within, Westchester County in a countywide format. Information on the authority and acknowledgments for each jurisdiction included in this countywide FIS, as compiled from their previously printed FIS reports, is shown below.

Ardsley, Village of: the hydrologic and hydraulic analyses for the FIS report dated March 1978 were performed by Camp, Dresser and McKee for the Federal Insurance Administration (FIA), under Contract No. H-3832. That work, which was completed in June 1977, covered all significant flooding sources in the Village of Ardsley.

Bedford, Town of: the hydrologic and hydraulic analyses for the FIS report dated June 1979 were prepared by Camp, Dresser and McKee for the FIA, under Contract No. H-3832. That work, which was completed in March 1977, covered all significant flooding sources in the Town of Bedford.

Briarcliff Manor, Village of: the hydrologic and hydraulic analyses for the FIS report dated August 1977 were performed by Camp, Dresser and McKee, Environmental Engineers, for the FIA, under Contract No. H-3832. That work, which was completed in October 1976, covered all flooding sources in Briarcliff Manor. All field survey work for this study was collected and compiled by Harry R. Feldman, Inc., Civil Engineers and Land Surveyors.

Bronxville, Village of: the hydrologic and hydraulic analyses for the FIS report dated October 1978 were performed by Harris-Toups Associates for the FIA, under Contract No. H-3962. That work, which was completed in November 1977, covered all significant flooding sources affecting the Village of Bronxville.

Cortlandt, Town of: the hydrologic and hydraulic analyses for the FIS report dated October 17, 1984, were performed by the New York State Department of Environmental Conservation and Dewberry & Davis for FEMA under Contract No. H-4547. That work was completed in December 1982.

Croton-on-Hudson, Village of: the hydrologic and hydraulic analyses for the FIS report dated May 2, 1983, were prepared by the New York State Department of Environmental Conservation (NYSDEC) and Dewberry & Davis, under Contract No. H-4547. That work was completed in September 1982.

Dobbs Ferry, Village of: the hydrologic and hydraulic analyses for the FIS report dated October 1978 were performed by Harris-Toups Associates for the FIA, under Contract No. H-3962. That work, which was completed in January 1978, covered all flooding sources affecting the Village of Dobbs Ferry.

Eastchester, Town of: the hydrologic and hydraulic analyses for the FIS report dated May 1979 for the flood profiles for the Bronx and Hutchinson Rivers and the floodway analysis of the upper Hutchinson River starting from Reservoir No. 1 was done by Camp, Dresser and McKee, Inc. Harris-Toups Associates, under Contract No. H-3962 with the FIA, reviewed their work for incorporation into this study and also performed the floodway analysis for the remainder of the Hutchinson River and for the entire length of the Bronx River. That work, which was completed in January 1978, covered all significant flooding sources affecting the Town of Eastchester.

Elmsford, Village of: the hydrologic and hydraulic analyses for the FIS report dated December 1978 were prepared by Harris-Toups Associates for the FIA under Contract No. H-3962. That work, which was completed in December 1977, covered all significant flooding sources in the Village of Elmsford. Hydrologic and hydraulic analyses, excluding floodway analysis for the Saw Mill River, were performed by Camp, Dresser and McKee, Inc., the firm who is preparing the study for the surrounding Town of Greenburgh.

Greenburgh, Town of: the hydrologic and hydraulic analyses for the FIS report dated June 18, 1987, were performed by Camp, Dresser and McKee, Inc., for the FIA, under Contract No. H-3832. That work, which was completed in February 1978, covered all significant flooding sources affecting the Town of Greenburgh.

Harrison, Town of: the hydrologic and hydraulic analyses for the FIS report dated September 15, 1981, were prepared by Camp, Dresser and McKee for the Federal Emergency Management Agency (FEMA) under Contract No. H-3832. The work for the original study was completed in May 1977. The hydrologic and hydraulic analyses in the FIS revision dated August 5, 1991, were prepared by the NYSDEC for FEMA, under Contract No. EMW-87-R-2448. The work for that revision was completed in March 1989. The hydrologic and hydraulic analyses for that revision were conducted by Leonard Jackson Associates under subcontract to NYSDEC.

Hastings-on-Hudson, Village of: the hydrologic and hydraulic analyses for the FIS report dated October 1978 were performed by Harris-Toups Associates for the FIA, under Contract No. H-3962. That work, which was completed in January 1978, covered all significant flooding sources affecting the Village of Hastings-on-Hudson.

Irvington, Village of: the hydrologic and hydraulic analyses for the FIS report dated September 1978 were performed by Camp, Dresser and McKee for the FIA under Contract No. H-3832. That work, which was completed in May 1977, covered all significant flooding sources affecting the Village of Irvington. All field survey data for that study were collected and compiled by Harry R. Feldman, Incorporated, under subcontract to the study contractor.

Larchmont, Village of: the wave height analysis for the Wave Height Analysis Supplement report dated January 16, 1984, were prepared by Dewberry & Davis for FEMA, under Contract No. EMW-C-0543. That work was completed in March 1963.

Mamaroneck, Town of: the hydrologic and hydraulic analyses for the FIS report dated September 15, 1989, represent a revision of the original analyses, prepared by Staunton and Freeman, Consulting Engineers for FEMA under Contract Nos. IAA-H1974 and IAA-H1675 The work for the original study was completed in June 1977. The updated version was prepared by Dewberry & Davis for FEMA under Contract No. EMW-85-C-2044. That work was completed in March 1988.

Mamaroneck, Village of:	the wave height analysis for the Wave Height Analysis Supplement report dated October 3, 1983, were prepared by Dewberry & Davis for FEMA, under Contract No. EMW-C-0543. That work was completed in March 1963.
Mount Kisco, Village of:	the hydrologic and hydraulic analyses for the FIS report dated September 18, 1986, were performed by Andrews & Clark, Inc., for FEMA, under Contract No. H-6810. That work was completed in April 1983.
Mount Pleasant, Town of:	the hydrologic and hydraulic analyses for the FIS report dated January 1982, were prepared by Camp, Dresser and McKee, Inc., for the FIA, under Contract No. H-3832. That work, which was completed in April 1977, covered all significant flooding sources in the Town of Mount Pleasant.
Mount Vernon, City of:	the hydrologic and hydraulic analyses for the FIS report dated April 1978 were performed by Harris-Toups Associates for the FIA under Contract No. H-3962. That work, which was completed in August 1977, covered all significant flooding sources affecting the City of Mount Vernon.
New Castle, Town of:	the hydrologic and hydraulic analyses for the FIS report dated March 1979 were prepared by Harris-Toups Associates for the FIA, under Contract No. H-3962. That work, which was completed in December 1977, covered all significant flooding sources in the Town of New Castle.

New Rochelle, City of: the hydrologic and hydraulic analyses for the FIS report dated December 1979 were performed by Camp, Dresser and McKee, for the FIA, under Contract No. H-3832. That work, which was completed in December 1977, covered all significant flooding sources affecting the City of New Rochelle.

North Castle, Town of: the hydrologic and hydraulic analyses for the FIS report dated December 2, 1983, represent a revision of the original analyses, prepared for FEMA. The hydrologic and hydraulic analyses in the revision dated January 2, 1991, were prepared by Edwards and Kelcey Engineers, Inc., for FEMA, under Contract No. EMW-85-C-1887. That work was completed in June 1988.

North Salem, Town of: the hydrologic and hydraulic analyses for the FIS report dated July 3, 1986, were performed by Andrews & Clark, Inc., for FEMA, under Contract No. H-6810. That work was completed in May 1982.

Ossining, Town of: the hydrologic and hydraulic analyses for the FIS report dated September 16, 1982, were prepared by the NYSDEC for FEMA, under Contract No. H-4547. That work was completed in December 1980.

Ossining, Village of: the hydrologic and hydraulic analyses for the FIS report dated January 5, 1982, were prepared by the NYSDEC for FEMA, under Contract No. H-4547. That work was completed in October 1980.

Peekskill, City of: the hydrologic and hydraulic analyses for the FIS report dated February 15, 1984, were prepared by the NYSDEC and Dewberry & Davis for FEMA, under Contract No. 4547. That work was completed in November 1982.

Pelham, Village of: the hydrologic and hydraulic analyses for the FIS report dated October 1978 were performed by Harris-Toups Associates for the FIA under Contract No. H-3962. That work, which was completed in October

1977, covered all significant flooding sources affecting the Village of Pelham.

Pelham Manor, Village of: the hydrologic and hydraulic analyses for the FIS report dated July 1978 were performed by Harris-Toups Associates, for the FIA, under Contract No. H-3962. That work, which was completed in September 1977, covered all significant flooding sources affecting the Village of Pelham Manor.

Pleasantville, Village of: the hydrologic and hydraulic analyses for the FIS report dated August 1978 were performed by Harris-Toups Associates for the FIA, under Contract No. H-3962. That work, which was completed in November 1977, covered all significant flooding sources affecting the Village of Pleasantville.

Port Chester, Village of: the hydrologic and hydraulic analyses for the FIS report dated July 1979 were prepared by Camp, Dresser and McKee for the FIA under Contract No. H-3832. That work, which was completed in May 1977, covered all significant flooding sources in the Village of Port Chester. The majority of field survey data for this study were supplied by the New England Division of the U.S. Army Corps of Engineers (USACE).

Pound Ridge, Town of: the hydrologic and hydraulic analyses for the FIS report dated May 25, 1984, represent a revision of the original analyses. The hydrologic and hydraulic analyses in the revision dated February 6, 1991, were prepared by Edwards and Kelcey Engineers, Inc., for FEMA, under Contract No. EMW-85-C-1887. That work was completed in February 1988.

Rye, City of: the hydrologic and hydraulic analyses for the FIS report dated October 1979 were performed by the Soil Conservation Service, U.S. Department of Agriculture, for the FIA, under Inter-Agency Agreement No. IAA-H-9-76, Project Order No. 9. That work, which was completed in June 1977, covered all significant flooding sources affecting the

City of Rye. The hydrologic and hydraulic analyses for Beaver Swamp Brook and the upper portion of Blind Brook were previously performed by Camp, Dresser and McKee, Environmental Engineers.

Rye Brook, Village of:	the hydrologic and hydraulic analyses for the FIS report dated March 1979 were prepared by Camp, Dresser and McKee, for the FIA under Contract No. H-3832. That work, which was completed in January 1977 and revised in January 1979, covered all significant flooding sources in the Town of Rye. Updated floodway computations for Blind Brook were prepared by Dewberry, Nealon and Davis under agreement with the FIA.
Scarsdale, Village of:	the hydrologic and hydraulic analyses for the FIS report dated December 1979 were performed by Camp, Dresser and McKee, Inc., for the FIA, under Contract No. H-3832. That work, which was completed in March 1978, covered all significant flooding sources affecting the Village of Scarsdale.
Sleepy Hollow, Village of:	the hydrologic and hydraulic analyses for the FIS report for the community ((then named the Village of North Tarrytown) dated February 17, 1981, were prepared by the NYSDEC for the FIA, under Contract No. H-4547. That work was completed in October 1979.
Somers, Town of:	the hydrologic and hydraulic analyses for the FIS report dated September 4, 1986, were performed by Andrews & Clark, Inc., for FEMA, under Contract No. H-6810. That work was completed in September 1982.
Tarrytown, Village of:	the hydrologic and hydraulic analyses for the FIS report dated May 18, 1981, were prepared by the NYSDEC for the FIA, under Contract No. H-4757. That work was completed in September 1979.
Tuckahoe, Village of:	the hydrologic and hydraulic analyses for the FIS report dated August 1978 were prepared by Harris-Toups Associates for the FIA,

under Contract No. H-3962. That work, which was completed in December 1977, covered all significant flooding sources in the Village of Tuckahoe. Hydrologic and hydraulic analyses for the flood profiles for the Bronx River were performed by Camp, Dresser and McKee, Inc., under contract with the FIA.

White Plains, City of: the hydrologic and hydraulic analyses for the FIS report dated July 1979 were performed by Camp, Dresser and McKee for the FIA, under Contract No. H-3832. That work, which was completed in June 1977, covered all significant flooding sources affecting the City of White Plains.

Yonkers, City of: the hydrologic and hydraulic analyses for the original February 1980 FIS report and August 15, 1980, FIRM (hereinafter referred to as the 1980 FIS), were prepared by Camp, Dresser and McKee for the FIA, under Contract No. H-3832. That work was completed in March 1978.

For the January 21, 1998, revision, the hydrologic and hydraulic analyses for the Saw Mill River were prepared by Leonard Jackson Associates for FEMA, under Inter-Agency Agreement No. EMW-90-R-3127, Option 2. That work was completed in July 1994. The Crestwood Lake elevation was taken from a report dated November 1987, titled Flood Plan Evaluation Crestwood Lakes Apartments, prepared by Joseph L. Colosimo, P.E., Consulting Engineers and Designers. This report was submitted in support of the January 11, 1988, Letter of Map Revision (LOMR), which was incorporated in the 1998 revision.

Yorktown, Town of: the hydrologic and hydraulic analyses for the original FIS report dated November 15, 1985, for Shrub Oak Brook, Shrub Oak Brook Tributary 1, Hallocks Mill Brook, Hallocks Mill Brook Tributary 1, Hallocks Mill Brook Tributary 2, and Saw Mill Creek were prepared by Andrews & Clark, Inc., for

FEMA, under Contract No. H-6810. That work was completed in July 1983.

In the August 16, 1993, revision, the hydrologic analyses for Shrub Oak Brook were prepared by the NYSDEC and the hydraulic analyses were prepared by Leonard Jackson Associates for FEMA, under Contract No. EMW-90-C-3127. That work was completed in February 1992.

The Village of Buchanan and the Town of Lewisboro while having floodplains mapped had no previous FIS report.

For this countywide FIS, revised hydraulic and hydrologic analyses for stream studied via detailed methods were prepared by Leonard Jackson Associates for FEMA, under contract EMN-2002-RP-0018. This work was completed in September 2006.

Floodplains for all detailed study, unrevised streams have been redelineated using updated topographic data provided to FEMA by Westchester County GIS as part of this revision. This work was done for FEMA by Dewberry & Davis under contract EMW-2000-CO-0003. New analyses were also undertaken for the majority of approximate study floodplains throughout the county.

Base map information shown on this FIRM was derived from multiple sources. The majority of the digital orthophotography was provided by Westchester County GIS. This information was produced at a scale of 1:9600 from photography dated April 2000. Additional information provided by the New York Office of Cyber Security & Critical Infrastructure Coordination was used to update selected areas to reflect current conditions. This information was produced as 20-centimeter resolution natural color orthoimagery from photography dated April 2004.

The coordinate system used for the production of this FIRM is Universal Transverse Mercator (UTM), North American Datum of 1983 (NAD 83), GRS80 spheroid. Corner coordinates shown on the FIRM are in latitude and longitude referenced to the UTM projection, NAD 83. Differences in the datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent counties may result in slight positional differences in map features at the county boundaries. These differences do not affect the accuracy of information shown on the FIRM.

1.3 Coordination

Consultation Coordination Officer's (CCO) meetings may be held for each jurisdiction in this countywide FIS. An initial CCO meeting is held typically with representatives of FEMA, the community, and the study contractor to explain the nature and purpose of a FIS, and to identify the streams to be studied by detailed methods. A final CCO meeting is held typically with representatives of FEMA, the community, and the study contractor to review the results of the study.

The dates of the initial and final CCO meetings held for Westchester County and the incorporated communities within its boundaries are shown in Table 1, "Initial and Final CCO Meetings."

TABLE 1 - INITIAL AND FINAL CCO MEETINGS

Community	Initial CCO Date	Final CCO Date
Village of Ardsley	September 10, 1975	*
Town of Bedford	October 2, 1975	November 14, 1978
Village of Briarcliff Manor	October 2, 1975	December 15, 1976
Village of Bronxville	March 1976	January 26, 1978
Village of Buchanan	*	*
Town of Cortlandt	May 24, 1977	October 6, 1983
Village of Croton-on-Hudson	May 23, 1977	December 28, 1982
Village of Dobbs Ferry	November 1976	*
Town of Eastchester	November 1976	*
Village of Elmsford	November 1976	December 1977
Town of Greenburgh	September 3, 1975	November 21, 1978
Town of Harrison	May 1986	July 27, 1990
Village of Hastings-on-Hudson	November 1976	April 17, 1978
Village of Irvington	September 10, 1975	November 21, 1977
Village of Larchmont	*	*
Town of Lewisboro	*	*
Town of Mamaroneck	September 10, 1974	November 3, 1988
Village of Mamaroneck	September 10, 1974	January 27, 1976
Village of Mount Kisco	May 29, 1979	June 25, 1985
Town of Mount Pleasant	October 2, 1975	July 10, 1979
City of Mount Vernon	November 1976	November 14, 1977
Town of New Castle	November 1977	April 5, 1978
City of New Rochelle	September 4, 1975	January 30, 1979
Town of North Castle	September 19, 1984	February 5, 1990
Town of North Salem	May 29, 1979	March 26, 1985
Town of Ossining	May 23, 1977	May 4, 1982
Village of Ossining	May 23, 1977	August 6, 1981
City of Peekskill	May 25, 1977	October 6, 1983
Village of Pelham	November 1976	March 7, 1978
Village of Pelham Manor	November 1976	March 7, 1978
Village of Pleasantville	November 1976	March 20, 1978
Village of Port Chester	September 3, 1975	November 28, 1977
Town of Pound Ridge	September 26, 1984	February 13, 1990
City of Rye	July 27, 1976	May 10, 1978
Village of Rye Brook	September 3, 1975	June 14, 1977
Village of Scardale	September 8, 1975	February 20, 1979

TABLE 1 - INITIAL AND FINAL CCO MEETINGS - continued

Community	Initial CCO Date	Final CCO Date
Village of Sleepy Hollow	May 23, 1977	November 1, 1979
Town of Somers	May 29, 1979	September 20, 1985
Village of Tarrytown	May 23, 1977	September 15, 1980
Village of Tuckahoe	November 1976	March 13, 1978
City of White Plains	September 4, 1975	December 7, 1978
City of Yonkers	September 11, 1975	September 27, 1978
Town of Yorktown	May 29, 1979	October 24, 1980

*Data not available

The initial CCO meeting for this first-time countywide was held on October 22, 2002. Representatives of the Westchester County Planning Department, Engineering Department and Public Works attended as well as representatives of FEMA, NYSDEC, Leonard Jackson Associates and Dewberry & Davis.

The NYSDEC solicited map update needs from the communities of Westchester County in follow-up meetings held between January 28-30, 2003.

The final CCO meeting was held on November 27-29, 2006. Representatives of FEMA, NYSDEC, Leonard Jackson Associates, Dewberry, and various communities in Westchester County were present.

2.0 AREA STUDIED

2.1 Scope of Study

This FIS covers the geographic area of Westchester County, New York.

The areas studied by detailed methods were selected with priority given to all known flood hazard areas and areas of projected development and proposed construction. All or portions of the flooding sources listed in Table 2, "Flooding Sources Studied by Detailed Methods," were studied by detailed methods. Limits of detailed study are indicated on the Flood Profiles (Exhibit 1) and on the FIRM (Exhibit 2). The areas studied were selected with priority given to all known flood hazard areas and areas of projected development and proposed construction.

TABLE 2 - FLOODING SOURCES STUDIED BY DETAILED METHODS

Annsville Creek	Blind Brook	Bronx River
Barney Brook	Branch Brook	Brown Brook
Barney Brook Tributary	Branch 1 Hutchinson River	Byram River Reach 1
Bear Gutter Creek	Branch 2 Kisco River	Byram River Reach 2
Beaver Swamp Brook	Brentwood Brook	Caney Brook

TABLE 2 - FLOODING SOURCES STUDIED BY DETAILED METHODS - continued

Clove Brook
Crook Brook
Croton River
David's Brook
East Branch Blind Brook
East Branch Mamaroneck River
East Branch Sheldrake River
Fly Kill
Furnace Brook
Gedney Brook
Grassy Sprain Brook
Hallocks Mill Brook
Hallocks Mill Brook Tributary 1
Hallocks Mill Brook Tributary 2
Highland Avenue Brook
Hillside Avenue Brook
Hutchinson River
Kensico Road Tributary
Kil Brook
Kisco River
Kisco River Tributary 1
Knollwood Brook
Lecount Creek
Leroy Avenue Brook
Long Island Sound
Mamaroneck River Lower Reach
Mamaroneck River Upper Reach
Manhattan Park Brook
Mianus River
Mill River
Mohegan Outlet
Muscoot River
Nanny Hagen Brook
Nelson Creek
New Croton Reservoir
Otter Creek
Peekskill Hollow Brook
Peekskill Hollow Brook Tributary
Pine Brook
Pitch Swamp Brook
Plum Brook
Plum Brook Tributary 1
Pocantico River Lower Reach
Pocantico River Upper Reach
Premium River
Saw Mill Creek
Saw Mill River
Saw Mill River West Channel
Sheldrake River
Shrub Oak Brook
Shrub Oak Brook Tributary 1
Sing Sing Creek
South Fox Meadow Brook
Sprain Brook
Sprout Brook
Stone Hill River
Sunnyside Brook
Tibbetts Brook
Titicus River
Tributary to Laurel Reservoir
Tributary to Mill River
Tributary 1 to Wampus River
Tributary 2 to Wampus River
Tributary 3 to Wampus River
Troublesome Brook
Unnamed Tributary to Plum Brook
Upper Reach Mamaroneck River
Upper Pocantico River
Wampus River
West Branch Blind Brook
Wickers Creek
Woodlands Road Brook 1
Woodlands Road Brook 2

As part of this countywide FIS, updated analyses were included for the flooding sources shown in Table 3, "Scope of Revision."

TABLE 3 - SCOPE OF REVISION

Stream	Limits of Revised or New Detailed Study
Barney Brook	From its confluence with the Hudson River to approximately 1,800 feet upstream of Fieldpoint Drive in the Village of Irvington
Barney Brook Tributary	From its confluence with Barney Brook to Halsey's Pond

TABLE 3 - SCOPE OF REVISION - continued

Stream	Limits of Revised or New Detailed Study
Beaver Swamp Brook	From its confluence with the Long Island Sound to approximately 450 feet upstream of Park Drive in the Town of Harrison
Blind Brook	From its confluence with the Long Island Sound to approximately 1,860 feet upstream of Lincoln Avenue in the Village of Rye Brook
Branch Brook	From Main Street in the Village of Mount Kisco to approximately 650 feet upstream of Wood Road in the Town of Bedford
Brentwood Brook	From its confluence with Beaver Swamp Brook to approximately 100 feet downstream of Haviland Road in the Town of Harrison
Bronx River	From the county boundary to approximately 180 feet upstream of Metro North Railroad
Brown Brook	From the confluence with Muscoot Reservoir to the county boundary
Byram River Reach 1	From its confluence with the Long Island Sound to the county boundary
Caney Brook	From its confluence with the Pocantico River to approximately 2,260 feet upstream of Long Hill Road in the Village of Briarcliff Manor
Clove Brook	From Taconic State Parkway to approximately 1,050 feet upstream of Wall Street in the Town of Mount Pleasant
Croton River	From its confluence with the Hudson River to approximately 3,650 feet upstream of Quaker Bridge Road in the Town of Cortlandt
East Branch Blind Brook	From its confluence with Blind Brook to approximately 260 feet upstream of Bluebird Hollow in the Village of Rye Brook
East Branch Mamaroneck River	From approximately 65 feet downstream of Anderson Hill Road to approximately 240 feet downstream of Park Lane in the Town of Harrison

TABLE 3 - SCOPE OF REVISION - continued

Stream	Limits of Revised or New Detailed Study
East Branch Sheldrake River	From its confluence with Sheldrake River to approximately 150 feet downstream of Fenimore Road in the Town of Mamaroneck
Fly Kill	From its confluence with Saw Mill River to approximately 130 feet downstream of Livingston Street in the Town of Mount Pleasant
Furnace Brook	From its confluence with Hudson River to approximately 1,520 feet upstream of Maple Avenue in the Town of Cortlandt
Grassy Sprain Brook	From its confluence with Bronx River to approximately 3,500 feet upstream of Palmer Road in the City of Yonkers
Highland Avenue Brook	From its confluence with Hutchinson River to approximately 1,270 feet upstream of California Road in the Town of Eastchester
Hillside Avenue Brook	From its confluence with East Blind Brook to approximately 140 feet upstream of Hillandale Road in the Village of Rye Brook
Hutchinson River	From approximately 650 feet downstream of Colonial Avenue to approximately 190 feet downstream of Baraud Road in the City of New Rochelle and Village of Scarsdale
Kensico Road Tributary	From its confluence with Nanny Hagen Brook to approximately 100 feet downstream of Rolling Hills Road in the Town of Mount Pleasant
Kil Brook	From its confluence with Hudson River to approximately 530 feet upstream of Brookside Lane
Leroy Avenue Brook	From approximately 640 feet downstream of South Broadway to approximately 280 feet upstream of Loh Avenue in the Village of Tarrytown
Mamaroneck River Lower Reach	From its confluence with Long Island Sound to Mamaroneck Reservoir

TABLE 3 - SCOPE OF REVISION - continued

Stream	Limits of Revised or New Detailed Study
Mamaroneck River Upper Reach	From approximately 120 feet downstream of I-287 on-ramp to approximately 310 feet upstream of Lake Street in the City of White Plains
Mianus River	From its confluence with Mianus Reservoir to approximately 5,250 feet downstream of Millers Mill Road Bridge in the Town of Bedford
Mohegan Outlet	From the county boundary to Lake Mohegan
Nanny Hagen Brook	From its confluence with Saw Mill River to approximately 730 feet upstream of Marble Avenue in the Town of Mount Pleasant
Nelson Creek	From its confluence with Brentwood Brook to approximately 80 feet downstream of Harrison Avenue in the Town of Harrison
Peekskill Hollow Brook Tributary	From its confluence with Peekskill Hollow Brook to approximately 251 feet upstream of Bear Mountain State Parkway in the Town of Cortlandt
Plum Brook	From confluence with Muscoot Reservoir to county boundary
Plum Brook Tributary 1	From its confluence with Plum Brook to approximately 180 feet upstream of Lake Shore Drive in the Town of Somers
Pocantico River Lower Reach	From its confluence with Hudson River to approximately 1,445 feet downstream of Route 117 in the Town of Mount Pleasant
Pocantico River Upper Reach	From Beech Hill Road to approximately 790 feet upstream of Chappaqua Road in the Village of Ossining
Saw Mill River	From approximately 130 feet upstream of New Main Street in the City of Yonkers to approximately 1,700 feet upstream of Kipp Street in the Town of New Castle
Sheldrake River	From its confluence with Lower Mamaroneck River to approximately 1,000 feet upstream of Oneida Road in the Village of Scarsdale

TABLE 3 - SCOPE OF REVISION - continued

Stream	Limits of Revised or New Detailed Study
Sing Sing Creek	From its confluence with Hudson River to approximately 280 feet upstream of Brookside Lane in the Town of Ossining
South Fox Meadow Brook	From its confluence with Bronx River to approximately 1,210 feet upstream of Oxford Road in the Village of Scarsdale
Sunnyside Brook	From its confluence with Hudson River to approximately 1,170 feet upstream of Mountain Road in the Town of Greenburgh
Tibbetts Creek	From the county boundary to approximately 650 feet upstream of Jervis Road in the City of Yonkers
Troublesome Brook Reach 1	From its confluence with Bronx River to Crestwood Lake
Unnamed Tributary to Plum Brook	From its confluence with Plum Brook to approximately 3,000 feet upstream of Dunhill Road in the Town of Somers
Wickers Creek	From its confluence with Hudson River to approximately 920 feet downstream of Broadway in the Village of Dobbs Ferry
Woodlands Road Brook 1	From its confluence with Brentwood Brook to approximately 330 feet upstream of Woodlands Road in the Town of Harrison
Woodlands Road Brook 2	From its confluence with Woodlands Road Brook 1 to approximately 120 feet upstream of Woodland Road in the Town of Harrison

The areas studied by detailed methods were selected with priority given to all known flood hazard areas and areas of projected development and proposed construction.

All or portions of numerous flooding sources in the county were studied by approximate methods. Approximate analyses were used to study those areas having a low development potential or minimal flood hazards. The scope and methods of study were proposed to, and agreed upon by, FEMA and Westchester County.

2.2 Community Description

Westchester County is located in the southeastern portion of the State of New York. It is bordered on the north by Putnam County; on the east by Fairfield County, Connecticut; on the south by the City of New York; on the west by the Hudson River. On the southeastern border lies the Long Island Sound.

Geologically, lower Westchester County is part of the Piedmont Zone, which is a transition between the Atlantic Coastal Plain to the southeast and the Hudson Highlands to the northwest. The ridges, valleys, and streams trend north to northeast. The eastern side of Westchester County rests on the upper edge of the unsubmerged portion of the continental shelf of the United States, which was scoured out to form Long Island Sound. The geology of the streams in southern Westchester County is generally similar. Principal structural elements in these various basins are Fordham Gneiss, Inwood Limestone, and Manhattan Schist, overlain by Charlton, Hollis, and Paxton soils. Outcroppings of bedrock are frequent throughout each of the watersheds. The unconsolidated overlying materials are predominantly of glacial origin. Stratified drift and alluvium deposits cover much of the low-lying lands, while till deposits of varying thicknesses cover much of the hillside bedrock (USACE, 1972). Vegetation consists of deciduous and coniferous trees, grasslands, and assorted shrubbery.

The climate of the county is one of long summers and short winters. The average annual temperature is approximately 50 degrees Fahrenheit (°F), with extremes varying from -34°F to 106°F. The average annual precipitation for the area is approximately 45 inches. Assured annual distribution of precipitation throughout the year is fairly uniform, with slightly higher amounts during the summer (U.S. Department of Commerce, June 1972). According to the 2000 U.S. Census Bureau, the population for Westchester County was 923,459 and the land area was 433 square miles (U.S. Census Bureau, 2000).

The Village of Ardsley is located in the Town of Greenburgh in the lower portion of Westchester County in southeastern New York. It is known as one of the Hudson River villages, all of which are situated on the eastern shore of the river, except for Ardsley, which is located adjacent to and east of Dobbs Ferry.

Currently, the Village of Ardsley is classified by the Westchester County Department of Planning as an area which is primarily high density and urban in character, surrounded by some medium to low density areas. Because Ardsley is not located on the Hudson River, industry did not develop as it did in the other Hudson River villages. However, with the development of the automobile and major transportation routes throughout Westchester County, the residential population grew substantially. The population was 4,269 at the 2000 census.

The Saw Mill River, originally known as the Nepperhan, is the major watercourse and source of flooding in Westchester County. The river, located entirely within Westchester County, drains an area of 26.5 square miles. The basin encompasses parts of the City of Yonkers; parts of the Villages of Hastings-on-Hudson, Dobbs Ferry, Ardsley, Irvington, Elmsford, Pleasantville, Sleepy Hollow, and Tarrytown;

and parts of the Towns of Greenburgh, Mount Pleasant and New Castle. The basin is oriented in a north-south direction, is roughly 19 miles long, and about 1.4 miles wide. The Saw Mill River rises about 5 miles east of Ossining, New York, and flows southward, past Ardsley, roughly paralleling and finally entering the Hudson River at Yonkers. The river's total length is approximately 25 miles. North of Ardsley, the Saw Mill River watershed is about twice the width of the lower portion of the basin. In the lower reaches, the stream is confined to a narrow valley by steep hills lying to the east and west of the river. At Hawthorne, near the upper limits of the basin, the topography of the confining Pocantico Hills rises to elevations of about 700 feet in the west, whereas the relief of the land mass lying east of the river is more gently rolling and subdued. Between Ardsley and Hawthorne, the hill crests attain elevations between 400 and 500 feet. In the vicinity of Yonkers, the crests are reduced to approximately 300 to 400 feet (USACE, 1972).

Sprain Brook is a small stream which has its origin north of Ardsley in the Town of Greenburgh, near the town's Elmwood Country Club. From there, the brook flows south along the Sprain Brook Parkway, until it enters the eastern edge of Ardsley just above Our Lady of Perpetual Help School and continues south until it leaves the village in the area of Ashford Park, eventually emptying into the Bronx River in Yonkers. The drainage area at the southern corporate boundary is 2.0 square miles, and the stream slope is approximately 60 feet per mile.

The Town of Bedford was first settled in 1680 by colonists from Stamford, Connecticut. The land which forms Bedford was purchased from a branch of the Mahican Indian nation during the period 1640 to 1722 (Barrett, R. T., 1955).

During the late 1800s, Bedford provided dairy products and farm produce to nearby New York City. Dams were constructed to provide sources of drinking water for the heavily populated areas to the south. During the twentieth century, the town has developed extensively as a commuter-residential area. The 2000 census population was 18,133. The Town of Bedford consists of three centers of intensive land use surrounded by sparsely developed rural areas used principally for residential or agricultural purposes. The three centers, which support most of the town's retail trade, are Bedford Village in the southeast quadrant of the town, and Bedford Hills and Katonah in the northwest quadrant.

The Hudson River, which flows along a western section of the Village of Briarcliff Manor, originates in the Adirondack Mountains, draining 13,400 square miles, most of which lies in the northern and eastern parts of New York, with small areas in Vermont, Massachusetts, Connecticut, and New Jersey. From its source, the Hudson River flows generally south to its confluence with its principal tributary, the Mohawk River. The main river then continues in a southerly direction for 155 miles to its mouth at the Battery, where it empties into upper New York Bay (Hudson River Valley Commission of New York, 1966).

The effect of tides in the Hudson River extends 154 miles from its mouth at the Battery to the Federal Lock and Dam at Troy, 10 miles upstream of Albany, New York. The mean tidal range decreases from 4.4 feet at the Battery to a minimum of 3.0 feet at Beacon, New York, 62 miles upstream of the Battery, and then increases to 4.8 feet at Troy (Hudson River Valley Commission of New York, 1966).

The Village of Briarcliff Manor is located in the northern half of Westchester County, with a section of the community bordering the Hudson River. Although Briarcliff Manor lies in both the Town of Ossining and the Town of Mount Pleasant, it is a separate village which was incorporated in 1902.

Presently, the Village of Briarcliff Manor is classified by the Westchester County Department of Planning as an area consisting primarily of medium density, suburban development with a small, concentrated urban area located in the central business district of the village (development within the floodplain of the Hudson River, Caney Brook, and the Pocantico River is minimal).

The northern areas of the county, like Briarcliff Manor, have experienced major population changes in the last 30 years (Westchester County Department of Planning, 1975). Having an area of less than 6 square miles, Briarcliff Manor has an estimated 2000 population of 7,696, an increase from the estimated 1975 population of 6,400 persons.

The Pocantico River is a major watercourse and source of flooding in Westchester County. It originates in the community of New Castle, north of Briarcliff Manor, and winds its way through wetlands and rural areas to the point where it enters Briarcliff Manor. The Pocantico River flows south, picking up runoff from urban areas and a major unnamed tributary (Tributary No. 1) to the east, until it eventually empties into the Pocantico Reservoir below Route 9A and South State Road. The total drainage area at the downstream limit of the detailed study is 7.80 square miles. This river is divided into a lower reach and an upper reach.

Caney Brook is a small stream which has its origin in the central portion of Briarcliff Manor, just above the Kings College. It also flows south and through a wetlands area. After crossing under Sleepy Hollow Road, the brook travels through a reach characterized by flat overbanks and a number of driveway culverts, until it passes under Long Hill Road. From this point, Caney Brook flows through a completely undeveloped area at a steep slope, to where it empties into the Pocantico Reservoir. The total drainage area, at the downstream limit of the detailed study, is 1.27 square miles.

The Village of Bronxville is located in the south-central portion of Westchester County, some 2.5 miles north of the New York City line. Bronxville is adjoined in the north by the Village of Tuckahoe, in the east by the Town of Eastchester which it is a part of, in the south by the City of Mount Vernon and in the west by the City of Yonkers. Major transportation arteries include the Bronx River Parkway, in the western portion of the village and White Plains Road (State Route 22) in the eastern part of the village. The village is served by the Harlem Division of Metro North Railroad, and has a commuter railroad station.

The total village area is one square mile, and the population in 1970 was 6,674 according to the U.S. Census Bureau. Current population, based on the 2000 census is estimated at 10,622.

The topography of Bronxville is irregular and contains lands ranging from flat to steeply sloping. Two valleys predominate; the Bronx River Valley in the west and the valley along Midland Avenue in the central portion of the village which runs in a general north-south direction. White Plains Road runs close to the ridge line which separates the Bronx River and Hutchinson River drainage basins. Lands west of White Plains Road generally drain into the Bronx River. Soil cover for the most part in the village is thin and exhibits high runoff properties even where vegetated. However, the extreme northeast and northwest corners of the village are characterized by deep and well-draining soils and yields relatively low runoff volumes when covered with vegetation (Westchester County Soil and Water Conservancy, 1973). The vegetation is of the urban variety consisting of shrubs, lawned areas and ornamental and shade trees.

The Bronx River is a tributary of East River and rises in New Castle in northern Westchester County. The river flows southward into Bronxville from Tuckahoe. The river's original channel had formed the entire western boundary of the village, separating it from the City of Yonkers. Due to channel relocations which occurred during the construction of the Bronx River Parkway, the existing river channel "wanders in and out" of the Bronxville boundary line several times before passing into the City of Mount Vernon in the south. For the most part, the floodplain of the Bronx River is occupied by Westchester County parkland and the Bronx River Parkway. In the vicinity of Parkway Road, residential buildings are in the floodplain, and at Paxton Avenue commercial buildings occupy the floodplain.

The area of the Hudson Valley in which the Village of Croton-on-Hudson is located was settled by the Dutch in the mid-seventeenth century and taken over by the British in 1664. Today, development in the village is primarily suburban. The Hudson River shoreline in Croton-on-Hudson is edged by railroad tracks. Most of the area, including the village, is expanding due to its proximity to New York City. The 2000 census population was 7,606.

The Village of Croton-on-Hudson is situated in the Piedmont geological zone. Elevations in the community range from 5 feet along the railroad to approximately 600 feet at the northern corporate limits (U.S. Department of the Interior, 1967, et cetera). The Village of Croton-on-Hudson has a land area of approximately 4.9 square miles.

The Croton River originates at New Croton Reservoir, approximately 0.6 mile upstream from the corporate limits of the Village of Croton-on-Hudson. The Croton River flows south to its confluence with the Hudson River.

The Village of Dobbs Ferry is located in the southern part of Westchester County on the east bank of the Hudson River, some 7 miles north of the New York City line. It is part of the Town of Greenburgh and is adjoined in the north by the

Village of Irvington, in the east by the Village of Ardsley and the unincorporated parts of the Town of Greenburgh, and in the south by the Village of Hastings-on-Hudson. The Hudson River forms the entire western boundary. The major transportation arteries are the Saw Mill River Parkway, which runs in a north-south direction along the eastern village boundary, and Broadway (Route 9), which runs north-south along the western limits. The village is served by the Hudson Division of Metro North Railroad with a passenger stop for commuters.

The total village area is 2.4 square miles and the 2000 population was 10,622, according to the census figures. The topography of Dobbs Ferry is irregularly hilly, generally moderately to steeply sloping. The main physiographic features are the steep-sided valleys of the Hudson and Saw Mill Rivers. Vegetation is mainly of the suburban type, consisting of lawns and ornamental and shade tree plantings where second and third-growth timber has been removed by residential development. Soils in the eastern half of the village are shallow, very rapid draining, and underlain by rock. These shallow soil regions become progressively deeper as the Hudson River is approached. The deeper soils in the western part of the village exhibit relatively low runoff potential when covered by vegetation but, if the vegetation is removed, large runoff volumes can be expected. The shallow soils in the eastern half of the village produce above average runoff even when under vegetative cover.

The Hutchinson River originates in Scarsdale and flows southerly into Eastchester. It enters the Village of Dobbs Ferry from the Village of Ardsley, crossing the Saw Mill River Parkway twice before splitting into two separate channels approximately 1,300 feet north of Lawrence Street. The western channel is located completely in the village while the eastern channel flows in the Town of Greenburgh just east of the village limits. The two channels rejoin approximately 1,200 feet downstream of Lawrence Street just after the west channel crosses the railroad tracks. Downstream, the river flows through a series of three reservoirs and also flows adjacent to the Hutchinson River Parkway. The floodplain in this area is unoccupied. The river leaves Eastchester, flows into Mount Vernon, and forms the eastern corporate limits with New Rochelle. The Hutchinson River rises in the City of New Rochelle near the northernmost Scarsdale-New Rochelle corporate limits and approximately 500 feet east of Brookline Road. From here, it flows southeast to Drake Road, where it turns south and forms the western corporate limits between Scarsdale and New Rochelle for a distance of approximately 4,900 feet.

The Hutchinson River continues its generally southern course until it empties into Long Island Sound at Pelham, New York. The Hutchinson River flows directly into Long Island Sound and forms almost the entire eastern city boundary with the Villages of Pelham and Pelham Manor. The southern reach of the river south of Canal Street is maintained as a navigable channel by the USACE and is also known as Eastchester Creek. The reach downstream of East Sandford Boulevard is affected by tides. The drainage area at the USGS gaging station No. 013015.00, located at the junction of the Hutchinson River Parkway and the Metro North Railroad tracks in the Village of North Pelham, is 5.8 miles, and consists mostly of residential areas.

Branch 1 Hutchinson River originates in the City of New Rochelle where it is piped. It emerges as an open channel in Pelham, north of the Metro North Railroad embankment opposite Storer Avenue. It then flows westerly, parallel to the embankment, down to Highbrook Avenue where it is once again piped. From there, it flows in a culvert emptying into the Hutchinson River at Colonial Avenue.

Wickers Creek is formed by two branches. The northern branch originates in the vicinity of Osceola Avenue and flows westerly, while the southern branch originates in the grounds of the Children's Village, paralleling Walgrove Avenue and Cedar Street. Both branches are intermittently piped and cross the old Croton Aqueduct in culverts. The branches join together west of the aqueduct within the grounds of Mercy College. Wickers Brook continues its westerly course from this confluence point toward the Hudson River in a deep ravine, passing under the Hudson Division of Metro North Railroad enroute.

The floodplain of the Saw Mill River in Dobbs Ferry is generally sparsely developed because of adjoining parkway and railroad lands. The floodplain of the Hudson River is also sparsely developed because of railroad lands immediately adjacent to the river. Portions of the North and South Branches of Wickers Creek run through the developed parts of the village, with properties adjacent to the stream bed.

The floodplains of both the Bronx and Hutchinson Rivers are occupied mostly by parkways and county parklands. Along the southern reach of the Hutchinson River downstream of East Sandford Boulevard, the floodplain is occupied by commercial properties.

The Town of Eastchester is located in the southern portion of Westchester County. The Town of Eastchester is bounded by the City of Yonkers and the Villages of Tuckahoe and Bronxville on the west, the Village of Scarsdale on the north, the City of New Rochelle on the east, and the City of Mount Vernon on the south. The incorporated area of the town is 3.26 square miles. Major north-south transportation arteries include the Bronx River Parkway in the western portion, State Route 22 (White Plains Road) in the central portion, and the Hutchinson River Parkway in the eastern portion of the town. The Harlem Division of Metro North Railroad passes through the town alongside the Bronx River, with railroad stations located in the adjacent communities of Tuckahoe and Scarsdale.

Land use in Eastchester is predominantly single-family residential. Multi-family buildings are located in several areas throughout the town. The 2000 census population was 31,318.

The topography of Eastchester is irregular, with lands ranging from mildly to steeply sloping. The main physiographic features are the Bronx and the Hutchinson River Valleys, which run in a north-south direction. Soils in the southern and northwest portions of the town are shallow and exhibit high runoff potential even where covered by vegetation. The remainder of the town has deep, well-drained soils, with a low runoff potential where covered by vegetation. Vegetation is of the suburban variety, consisting of lawns, shrubbery, and tree plantings.

The Village of Elmsford is located in the central part of Westchester County, 11 miles north of the New York City boundary and 2 miles east of the Hudson River in southern New York State. It is part of the Town of Greenburgh and is completely adjoined and surrounded by the unincorporated areas of the town. The village is a major roadway hub, with the Saw Mill River Parkway and Sprain Brook Parkway traversing the village lands in a north-south direction, and the Cross Westchester Expressway cutting through the village in an east-west direction. In addition to these expressways, Route 119 (Tarrytown-White Plains Road) is a well used east-west artery linking Tarrytown to White Plains, and Route 9A (Saw Mill River Road) is another primary north-south automobile road. The total village area is 1 square mile, and the 2000 population was listed as 4,676 according to the U.S. Census Bureau. No significant increases or decreases in population are expected.

Knollwood Brook is a branch of the Bronx River. The brook rises in Greenburgh and passes into the eastern part of Elmsford where it crosses Knollwood Road, Woodside Avenue and Alma Place before passing under the Cross Westchester Expressway. It joins another branch south of the Expressway and passes into Greenburgh at Knollwood Road. Residential buildings occupy the floodplain.

The Town of Greenburgh is located in lower Westchester County. It is bounded on the north by the Town of Mt. Pleasant, and on the south by the City of Yonkers. East of the Bronx River is the Town of North Castle, the City of White Plains, and the Village of Scarsdale. There are 6 incorporated villages within the town boundaries: Ardsley, Dobbs Ferry, Elmsford, Hastings-on-Hudson, Irvington, and Tarrytown.

The 19 square miles within the Town of Greenburgh corporate limits had a 2000 population of 86,764, a significant increase over the 1970 population of 40,540.

The Bronx River originates in a lake along the west side of the Taconic State Parkway in the Gate of Heaven Cemetery in Mount Pleasant and flows south through Greenburgh, North Castle, White Plains, Scarsdale, Yonkers, Eastchester, Bronxville, Mount Vernon, and the Borough of the Bronx in New York City, where it empties into the East River between Hunts and Clason Points. The drainage area of the Bronx River at the New York City boundary is 31.4 square miles.

Prior to the construction of the first Kensico Dam in 1885, the river originated in the Town of New Castle. This original dam, replaced by the present structure in 1915, has cut off this portion of the river's natural basins from the channel south and west of it. The Kensico Reservoir supplies water to New York City.

The two White Plains water-supply reservoirs and the Grassy Sprain Reservoir, which supplies water to Yonkers, also lie within the natural drainage basin of the

Bronx River. The first two reservoirs discharge no flow to the river, and Grassy Sprain Reservoir retains so much of the water from its drainage area that its contribution to discharge in the Bronx River is insignificant. The area of the natural drainage basin of the Bronx River at its mouth is 56.4 square miles. Exclusion of the areas drained by the four water-supply reservoirs reduces this area to 38.3 square miles. The average width of the drainage basin is 2.5 miles.

In its 23-mile course, the river falls about 250 feet, at an average slope of 0.2 percent. About 40 feet of this fall occurs at dams. The river drops about 58 feet in 4.7 miles within the Town of Greenburgh at an average slope of 0.2 percent.

Although it is estimated that 60 percent of the Bronx River's drainage area has been developed for residential, commercial, and recreational uses (Malcolm Pirnie Engineers, 1975), the overbanks of the river, most of which is county-owned parkway land, are undeveloped, except for small areas in the lower portion of the basin in Westchester County. Several bridges and dams however, have been built across the river; several sewers cross beneath its bed, and almost 100 storm drains empty into it. The Bronx Valley sanitary trunk sewer parallels the river along most of its length.

Troublesome Brook Reach 1 and Hartsdale Brook are two small brooks which are highly urbanized and, for the most part, have been placed in culverts and paved over. Both of these brooks have drainage areas less than 1 square mile and have small channel capacities. Development in the floodplains is both residential and commercial in nature.

The small brook near Edgepark and Parkway Homes Roads has its origin in Greenburgh and empties into the Bronx River. The stream is flat and flows are controlled by a small culvert which passes under the Old Aqueduct Road. Development in the floodplain consists of residential structures only.

The Town of Harrison is located in southeastern Westchester County, approximately 22 miles northeast of New York City. The town is located inland of Long Island Sound and is bordered by the City of Rye to the east, the Village of Mamaroneck to the south, the City of White Plains to the west, the Town of North Castle to the north, and the Village of Rye Brook to the northeast. The 17.4 square mile village had a 2000 census population of 24,154.

Blind Brook, Beaver Swamp Brook, Brentwood Brook, the Mamaroneck River, and the East Branch Mamaroneck River are the major watercourses and principal sources of flooding in the town. Silver Lake is also a limited source of flooding.

Blind Brook originates at the Westchester County Airport and flows south, forming the corporate limits between the Town of Harrison, the Town of Rye, and the Village of Rye Brook on the eastern side of Harrison. The brook then flows through the City of Rye and empties into Milton Harbor on Long Island Sound. The drainage area of Blind Brook is 11 square miles and consists primarily of residential areas.

Beaver Swamp Brook, located in southern Harrison, originates in the area of the Westchester Country Club and flows southeast into the City of Rye. Within Rye, Beaver Swamp Brook flows south to the railroad tracks, where it forms the corporate limits between the Town of Harrison and the City of Rye. The brook then continues to flow south into the Village of Mamaroneck and finally into Mamaroneck Harbor on Long Island Sound. The drainage area at USGS gaging station No. 01300500, at Short Street in the Village of Mamaroneck, is 4.7 square miles that consists mainly of golf courses and residential areas.

Brentwood Brook, also located in southern Harrison, originates in the area north of Union Avenue and flows south through the center of downtown Harrison. It then joins Beaver Swamp Brook at the southernmost point in the Town of Harrison, where the corporate limits of the Village of Mamaroneck, the City of Rye, and the Town of Harrison meet. The drainage area of Brentwood Brook is 2 square miles and consists of densely populated residential areas.

The Mamaroneck River originates in northern Harrison and flows southward, forming the corporate limits between the City of White Plains and the Town of Harrison. At the Mamaroneck Reservoir, the river then forms the corporate limits between the Village of Mamaroneck and the Town of Harrison. At the New England Thruway, the Mamaroneck River proceeds to flow south through the center of the Village of Mamaroneck, where it joins the Sheldrake River and finally empties into Mamaroneck Harbor on Long Island Sound. The drainage area of the Mamaroneck River is 17.3 square miles and consists predominantly of residential and undeveloped areas. This river is divided into a lower reach and an upper reach.

The East Branch Mamaroneck River is the furthest upstream tributary along the Mamaroneck River. It originates in an area just south of Rye Lake and flows southwest into the Mamaroneck River. It joins with the Mamaroneck River just downstream of Anderson Hill Road. The drainage area is 2.9 square miles that consist of undeveloped and newly developing residential areas.

Silver Lake is located in northwestern Harrison and forms a portion of the corporate limits between the Town of Harrison and the City of White Plains. Silver Lake is the furthest upstream point on the Mamaroneck River. The drainage area of the tributary to Silver Lake is 0.6 square mile and consists of undeveloped areas.

West Branch Blind Brook has an average slope of 77 feet per mile and a drainage area of approximately 2.96 square miles. Nelson Creek has an average slope of 52.3 feet per mile and a drainage area of approximately 0.6 square mile. Lecount Creek has an average slope of 77.1 feet per mile and a drainage area of approximately 0.36 square mile.

The Village of Hastings-on-Hudson is located in the southern part of Westchester County, on the east bank of the Hudson River some 5 miles north of the New York City line. It is part of the Town of Greenburgh and is adjoined in the north by the Village of Dobbs Ferry, in the east by the Town of Greenburgh, and on the south by the City of Yonkers. The Hudson River forms the entire western boundary. The total village area is 2 square miles, and the 2000 census population was 7,648.

The overwhelming land use is devoted to single-family residential housing on three-eights, one-half, and one-acre lots. Multiple residence zones have been set up abutting Broadway and the central business district on Warburton Avenue and Main Street.

The topography of Hastings-on-Hudson is irregularly hilly and generally moderately to steeply sloping. The main physiographic features are the steep-sided valleys of the Hudson and Saw Mill Rivers.

The Village of Irvington is located in lower Westchester County, west of the Town of Greenburgh.

Currently, the Village of Irvington is classified by the Westchester County Department of Planning as an area which is primarily high-density urban and medium-density suburban in character. Because Irvington is located on the Hudson River, with access to shipping transportation, some industry has developed. With an area of about 2.0 square miles, Irvington had a 2000 population of 6,631.

Barney Brook is a small stream which has its origin in the Village of Irvington, above the Irvington Reservoir. From the reservoir, the brook flows west at a steep gradient (averaging 205 feet per mile) through a residential area characterized by numerous bridges and driveway culverts. After passing under the Old Croton Aqueduct, Barney Brook enters a long culvert at Buckhout Street and is carried through the culvert and into the Hudson River. Development in the floodplain consists entirely of residential construction, except for the Trent Building on south Buckhout Street, which houses a number of small businesses along the Hudson. The drainage area at Buckhout Street is approximately 1.18 square miles.

The Barney Brook Tributary is a small stream which starts at Halsey's Pond in Irvington and flows through a residential area to its confluence with Barney Brook, just below Broadway. Development in the floodplain is strictly from residences except for a small playground at Station Road. The drainage area at the confluence of the tributary and Barney Brook is 0.32 square mile.

Sunnyside Brook is another small stream which forms in the Town of Greenburgh and flows into Irvington at Taxter Road, through numerous residential properties and the Baker-Firestone property, and then along Sunnyside Lane from Hudson View Avenue to Broadway. From just below Broadway, the brook leaves the Village of Irvington and enters Tarrytown. Farther downstream, the brook winds in and out of the Village of Irvington for short distances before eventually emptying into the Hudson River. The drainage basin is steep (stream gradient is 260 feet per mile) which results in a high runoff rate. Development in the floodplain is strictly residential. The drainage area at the Hudson River is 0.68 square mile.

Riverview Road Brook is a small stream which forms in the Village of Irvington above the high school and flows west through a number of residential properties and several long culverts. Downstream of Broadway and the Old Croton Aqueduct, the brook drops steeply and finally empties into the Hudson River. Development in the floodplain is strictly residential. The drainage area at the Hudson River is approximately 0.2 square mile.

The Village of Larchmont is located in lower Westchester County, within the Town of Mamaroneck. Its population was 6,485 at the 2000 census. It is located on the shore of the Long Island Sound which is the community's principal source of flooding.

The Village of Mamaroneck is located in lower Westchester County, within the Towns of Mamaroneck and Rye. Its population was 18,752 at the 2000 census. It is located on the shore of the Long Island. Like its neighboring village of Larchmont, the village used to function as the location of summer residences for New York City residents. It is now primarily a bedroom community for commuters to Manhattan. A major harbor on the Long Island Sound supports facilities for pleasure boating and contains a large park with sporting facilities.

The Town of Mamaroneck is located along the shore of Long Island Sound approximately 3.5 miles from the New York City corporate limits. It is bordered by the Village of Larchmont and Long Island Sound to the south, the Village of Mamaroneck and the City of Rye to the east, the Village of Scarsdale to the north, and the City of New Rochelle to the west. The town is mainly residential with only local commerce and little industry. In 2000, the population of the town was estimated 28,967. The geomorphology of Mamaroneck is characterized by low hills rising from Long Island Sound with a maximum elevation within the town of approximately 210 feet.

The Sheldrake River originates in the City of White Plains north of Scarsdale near the junction of Cushman and Garden Roads and drains an area of approximately 0.4 square mile upstream of Cayuga Pond, near the intersection of Cayuga and Oneida Roads. From here, the river flows in a generally southerly direction through the Village of Scarsdale and the City of New Rochelle until it enters the Town of Mamaroneck, where it bends to the east and joins the Mamaroneck River. The Sheldrake River with a drainage area of 6.3 square miles, and the East Branch Sheldrake River with a drainage area of 1.9 square miles are the major streams within the Town of Mamaroneck. The Sheldrake River and the East Branch Sheldrake River flow through Mamaroneck in a generally southeastern direction. It then flows into the Village of Mamaroneck, where it joins the Mamaroneck River and finally empties into Long Island Sound. The drainage area of the Sheldrake River at the Quaker Ridge Road crossing is 2.8 square miles, and consists mostly of residential areas.

The East Branch Sheldrake River is formed by the confluence of two minor streams at Fenimore Road. These two tributaries flow through sparsely developed lands.

Pine Brook, a stream which has been enclosed in drains, enters the town at Fifth Avenue, and flows into Larchmont. No flooding problems have been reported in this area but analysis shows a possible ponding problem for the 100-year storm event.

The Village of Mount Kisco, is located in the central portion of Westchester County. The village is bordered by the Town of Bedford on the north and east and the Town of New Castle on the south and west. Mount Kisco is approximately 32 miles northeast of New York. Mount Kisco has an area of 3.09 square miles with a population of 9,983, as reported by the 2000 Census.

Nanny Hagen Brook is a small, steep stream which has its origin in the hills north of Pleasantville, in the vicinity of Bear Ridge Lake and Munson Pond. From its origin, Nanny Hagen Brook flows south through Pleasantville and into the incorporated area of Mount Pleasant, where it joins the Kensico Road Tributary flowing from the east. At its confluence with the Saw Mill River, Nanny Hagen Brook has a drainage area of 2.86 square miles.

Fly Kill Brook is a small stream which originates in the hills east of Commerce Street in Hawthorne and flows northwest through residential areas to its confluence with the Saw Mill River. The drainage area at the Taconic Parkway and State Route 141 crossing is 0.72 square mile.

Clove Brook is a small, steep stream which originates in the hills east of Hawthorne and flows southwest through a residential area to Davis Brook and eventually into the Bronx River. The drainage area at the confluence of Clove and Davis Brooks is 1.2 square miles.

The City of Mount Vernon is located in the southern portion of Westchester County, and bounded by the City of Yonkers on the west, by the Village of Bronxville and the Town of Eastchester on the north, by the Villages of Pelham and Pelham Manor on the east, and by New York City on the south. The city area is 4.1 square miles and a 2000 population of 68,321.

The City of Mount Vernon lies entirely within the drainage area boundaries of the Bronx River, which drains the western part of the city, and the Hutchinson River, which drains the eastern part of the city. Both drainage courses flow in a southerly direction. The Bronx River enters Mount Vernon from Yonkers and Bronxville in the north and leaves through Yonkers and New York City in the south.

Laurel Brook is a tributary of the Bronx River. The stream flows through Hunts Wood Park and emerges from a culvert at a point west of the Central Parkway, flowing north and then west. Thereafter, it flows under Gramatan Avenue before joining the Bronx River south of Midland Avenue.

The Town of New Castle is located in the northern half of Westchester County, approximately 20 miles north of the New York City line. The western town boundary comes within a mile of reaching the Hudson River. The town is adjoined on the north by the Towns of Cortland, Yorktown, and Somers; on the east by the Towns of Bedford and North Castle and the Village of Mount Kisco; and on the southwest by the Towns of Mount Pleasant and Ossining and the Village of Pleasantville. The major transportation arteries include the Saw Mill River and Taconic State Parkways, which pass through the town in a north-south direction, and Route 133, which runs east-west and connects Ossining to Mount Kisco. The town is currently served by the Harlem Division of Metro North Railroad with a commuter stop at the hamlet of Chappaqua. The total town area is 23.2 square miles and a population of 17,491.

The New Croton Reservoir, a source of water for New York City, is located in the extreme northern portion of New Castle. It is a receiving reservoir for most of the streams in the northern and eastern sections of the town and was studied by detailed methods.

The Kisco River originates in the extreme southern portion of the Town of New Castle, in the area between the Cenacle and Wampus Lake Reservoirs. It flows in a northerly direction passing through the Village of Mount Kisco and reenters New Castle north of the railroad tracks upstream of the point where it is joined by its tributary, Chappaqua Brook. From this point to a point a short distance north of Millwood Road, a distance of about 1.5 miles, it forms the boundary between New Castle and Mount Kisco. Flowing in an irregular northerly course, it joins its receiving stream, the New Croton Reservoir. The Kisco River was studied by detailed methods northwards from the point where it reenters New Castle from Mount Kisco to its mouth.

Branch 2 Kisco River originates in the area south of Kathleen Lane and flows northward before passing into the Village of Mount Kisco. It was studied by detailed methods in the reach described.

Gedney Brook originates in the Gedney Swamp area to the east of Millwood Road and flows in a northward direction, crossing Turner Drive, Millwood Road and Seven Bridges Road before passing into Yorktown. It was studied by detailed methods from the Woodmill Road crossing northwards.

The City of New Rochelle is located in southeastern Westchester County. New Rochelle lies approximately 10 miles northeast of Manhattan and encompasses an area of 10.7 square miles. Its 2000 census population was 72,182. It is bordered by the Village of Scarsdale on the north, the Town of Mamaroneck and the Village of Larchmont on the east, the Towns of Pelham and Eastchester on the west, and Long Island Sound on the south. The city consists of residential areas in the north, and industrial and commercial areas in the south.

The Hutchinson and Sheldrake Rivers are the major watercourses and principal sources of flooding in the City of New Rochelle. Burling and Stephenson Brooks are limited sources of flooding.

Burling Brook is located in the southwestern corner of New Rochelle. The drainage area is 1.4 square miles, and it consists mostly of commercial and industrial areas. Burling Brook flows in a southeasterly direction and empties into Long Island Sound.

Stephenson Brook is located in the center of New Rochelle. The drainage area to Eastchester Road is 1.4 square miles and consists mostly of residential areas. Stephenson Brook flows in a southerly direction and eventually empties by culvert from Eastchester Road into Long Island Sound.

The Town of North Castle is located in western Westchester County, approximately 30 miles northeast of New York City. The total land area of the town is approximately 26.3 square miles. The 2000 census population was 10,849. It is bordered by the Towns of Bedford and New Castle to the north; the Town of Pound Ridge to the east; the Towns of Greenwich and Stanford, Connecticut, and the Town of Harrison to the south; and the Town of Mount Pleasant to the west.

Bear Gutter Creek originates approximately 0.6 mile west-northwest of the Village of Armonk and flows towards the southwest to its mouth at Bear Gutter Inlet to Kensico Reservoir. Its drainage area at the mouth encompasses approximately 0.95 square mile.

The Byram River originates approximately 1 mile north of the corporate limits of the Town of North Castle, in the Town of New Castle, and flows towards the southwest through the town. Its drainage area at the downstream corporate limits encompasses approximately 8.39 square miles, including the drainage area for the Byram Lake Reservoir, which creates a water supply for the Village of Mount Kisco.

The Wampus River originates in the Town of New Castle, approximately 0.4 mile northwest of the northern corporate limits of the town, in the vicinity of the Wampus Lake Reservoir. The river flows towards the east, to the confluence of Tributary 2 to the Wampus River, where it turns and flows towards the south to its confluence with the Byram River. Its drainage area encompasses approximately 3.6 square miles at its confluence with the Byram River.

Tributary 1 to the Wampus River originates approximately 1.7 miles northwest of Armonk, and flows towards the southeast, to its confluence with the Wampus River. Its drainage area encompasses approximately 0.7 square miles at its confluence with the Wampus River, approximately 200 feet south of New York State Route 22.

Tributary 2 to the Wampus River originates approximately 0.1 mile south of the northern corporate limits, in the vicinity of Seven Springs Farm. The tributary flows towards the south, through the town, to its confluence with the Wampus River; at this point, the drainage area encompasses approximately 0.8 square miles.

Tributary 3 to the Wampus River originates approximately 0.2 mile north of the northern corporate limits, in the vicinity of Tripp Road. The tributary flows towards the southeast, to its confluence with the Wampus River. Its drainage area is approximately 0.3 square mile at its confluence with the Wampus River.

The tributary to the Pleasantville Cove section of Kensico Reservoir, which flows towards the south, originates within the Town of New Castle. The tributary to Bear Gutter Creek, which flows towards the south, originates within the town. It has a total drainage area of approximately 0.12 square miles at its mouth. The Northwest Tributary to Mianus River, which flows towards the southeast, originates within the town. It has a total drainage area of approximately 0.53 square miles at its mouth. The Southeast Tributary to Mianus River, which flows towards the north, originates within the town. It has a total drainage area of approximately 0.13 square miles at its mouth. The Tributary to Converse Lake, which flows towards the south, originates within the town. It has a total drainage area of approximately 0.36 square mile at its mouth. Piping Brook, which flows towards the south, originates within the town. It has a total drainage area of approximately 1.18 square miles at the downstream corporate limits.

The Town of North Salem is in the northeastern portion of Westchester County. The town is bordered by the Towns of Southeast and Carmel on the north; the Town of Somers on the west; the Town of Lewisboro on the south; and the Town of Ridgefield, Connecticut, on the east. North Salem is approximately 45 miles northeast of New York City. North Salem has an area of 42 square miles. The 2000 census population was 5,173. Development in North Salem is predominantly residential with substantial open watershed areas. The Titicus Reservoir is located in the central portion of the community.

The Town of Ossining is located in the west-central portion of Westchester County. The town is bordered by the Town of Mount Pleasant on the east and south, and the Town of New Castle on the north. The Hudson River makes up the western corporate limits. The Town of Ossining, including the Village of Ossining, has a land area of approximately 12 square miles. The 2000 census population was 36,534.

Kil Brook originates in the Town of Ossining and flows south to become a part of the corporate limits between the Village of Ossining and the Town of Ossining. Kil Brook flows west through the village before turning southwest into the Hudson River.

The Village of Ossining is located in western Westchester County. It is bordered on the north, east, and south by the Town of Ossining with the Hudson River along the western boundary. The Village of Briarcliff Manor lies partially within the town, located south of the village.

The Village of Ossining is urban in character with suburban development comprised of houses and estates. The village has a land area of approximately 3 square miles and a population, according to the 2000 census, of 24,010.

The City of Peekskill is located in northwest Westchester County, approximately 30 miles north of New York City. The city is bordered by the Village of Buchanan to the south and the Town of Cortlandt to the north, south, and east. The Hudson River is located to the west. Peekskill has an area of approximately 5 square miles and a population of 5,348, according to the 2000 census.

Annsville Creek originates in Putnam County, New York, and flows southwest to its confluence with the Hudson River. Peekskill Hollow Brook originates at Lake Tibet in Putnam County, then flows southwest to its confluence with Sprout Brook to form Annsville Creek.

Elevations in the community range from less than 10 feet along the railroad to approximately 600 feet at Jacobs Hills at the northeast corporate limits (U.S. Department of the Interior, 1967, et cetera).

Prior to 1891, In the Village of Pelham, the Villages of Pelham and North Pelham were separately incorporated. These two villages were united as the Village of Pelham in 1975. The Village of Pelham is located in the southeastern portion of Westchester County. The Village of Pelham is adjoined in the south by Pelham Manor, in the west by the City of Mount Vernon, and in the north and east by the City of New Rochelle.

The total village area is 1.34 square miles. The 2000 census population was 6,400.

The Village of Pelham Manor is located in the extreme southeastern portion of Westchester County. Pelham Manor is part of the Town of Pelham and is adjoined in the south by New York City, in the west by the City of Mount Vernon, in the north by the Village of Pelham, and in the east by the City of New Rochelle.

The total village area is 1.34 square miles and a population of 5,466, according to the 2000 census.

Long Island Sound is located in the southeastern portion of the village. Runoff not flowing towards the Hutchinson River either retreats to Long Island Sound or to Burling Brook in New Rochelle.

The Village of Pleasantville is located in the center of Westchester County approximately 16 miles north of the New York City line and about 5 miles east of the Hudson River. It is part of the Town of Mount Pleasant and is surrounded almost completely by the town, except at its northern limits where it is adjoined by the Town of New Castle.

The total village area is 1.7 square miles. The 2000 census population was 7,172.

The Town of Pound Ridge is located in the northeastern portion of Westchester County, approximately 26 miles northeast of New York City. It is bordered by the Town of Lewisboro to the east and north, the Towns of Bedford and North Castle to the west, and the City of Stamford and the Town of New Canaan, Connecticut, to the south. The total land area encompassed by the town is 23.2 square miles The 2000 census population was 4,726.

The Mill River originates on West Mountain in the Town of Ridgefield, Connecticut. It flows towards the southwest from Ridgefield through Lewisboro, into and through Pound Ridge to the Laurel Reservoir in Stamford, Connecticut. The drainage area at the downstream corporate limits is 10.5 square miles.

Tributary to Mill River originates from Mallard Lake, within the Town of Pound Ridge. It flows towards the west to its confluence with the Mill River. The drainage area at the confluence is 1.6 square miles.

Tributary to Laurel Reservoir originates in the vicinity of East Woods Road and Laurel Road, within the Town of Pound Ridge, and flows towards the south through the downstream corporate limits to the Laurel Reservoir in New Canaan, Connecticut. The drainage area at the downstream corporate limits is 0.9 square mile.

The Village of Port Chester is situated on the eastern border of Westchester County. It lies within the Town of Rye and is bounded on the west and northwest by the Village of Rye Brook, on the northeast by the Town of Greenwich, Connecticut, and on the south by the City of Rye, with a small coastline on Long Island Sound to the southeast. The total area of the village is 2.22 square miles, with a length of coastline of approximately 2,000 feet. The population is 27,867, according to the 2000 census.

The Byram River originates in Bedford, New York, flows in a southerly direction through Greenwich, Connecticut, and empties into Long Island Sound at the Greenwich-Port Chester boundary. The drainage area of the entire basin at its mouth is approximately 31 square miles (USACE, 1964).

The floodplain of the Byram River in Port Chester is zoned for residential, commercial, and industrial use and is heavily developed.

The flood-prone area adjacent to Long Island Sound is zoned for residential use and is developed to a limited degree.

The City of Rye is located in the southeastern part of Westchester County, about 7 miles north of the New York City line. It is bordered on the west by the Village of Mamaroneck, on the north by the Town of Rye and Village of Rye Brook, on the northwest by the Town of Harrison, and on the northeast by the City of Port Chester. Long Island Sound forms the southern and eastern boundaries. The city has a population of 14,955 over an area of 20 square miles.

Blind Brook originates north of the city and flows south through the center of the city to Long Island Sound. The area along the watercourse through the city is highly developed with many residences, businesses, and public buildings located adjacent to the stream. Beaver Swamp Brook also originates north of the city and flows through the northwestern edge forming part of the border with the Town of Harrison. The lower reaches are residential areas.

The Village of Rye Brook is located in east-central Westchester County, and is predominantly a residential community. It is located just inland of the western end of Long Island Sound and consists of an area of 3.4 square miles and a population of 8,602 according to the 2000 census. The Village of Rye Brook is bordered by the Town of Harrison to the west, the City of Rye to the south, the Village of Port Chester to the southeast, the Town of Greenwich, Connecticut, to the northeast, and the Town of North Castle to the north.

The Village of Scarsdale is located in south-central Westchester County, 21 miles north-northeast of midtown Manhattan. The City of White Plains abuts Scarsdale on the north, northeast, and east, with the Town of Harrison adjoining a portion of the eastern corporate limits. To the south, the village is bounded by the Town of Mamaroneck, the City of New Rochelle, and the Town of Eastchester, with the Town of Greenburgh located across the Bronx River to the west. The northeastern tip of Yonkers also touches Scarsdale in the southern corner of its western corporate limits. The total area of the village is 6.6 square miles. The 2000 census population was 17,823.

South Fox Meadow Brook originates in the City of White Plains, northeast of the Village of Scarsdale corporate limits, and enters the village near Fairview and Dickel Roads. From here, it flows in a southerly direction to the intersection of White Plains Post and Murray Hill Roads, a distance of approximately 6,500 feet. For 4,300 feet of this distance, the brook is conveyed through closed conduits. As the brook passes under White Plains Post Road at this intersection, it is joined by its southerly branch which originates at Sherbrooke and Heathcote Roads and drains approximately 0.25 square mile. The total drainage area below the confluence of this tributary is approximately 1.0 square mile, and the average slope is 1.6 percent or approximately 84.0 feet per mile.

From here, the brook bends slightly to the southwest and travels through village-owned land west of the high school and the library until it turns to the west and passes under Harcourt Road, a distance of approximately 0.6 mile. From Harcourt Road to Fox Meadow Road, the stream meanders in a northwesterly direction through privately owned residential property for a distance of slightly greater than 0.5 mile. At the Bronx River Parkway boundary west of Fox Meadow Road, the brook drops rapidly through county-owned land and passes under the parkway to its confluence with the Bronx River. At the Bronx River, the total drainage area is 1.4 square miles, and the average slope is 26 feet per mile or 0.5 percent, over its 3-mile length.

The Village of Sleepy Hollow is located in southwestern Westchester County. It is bordered by the Town of Mount Pleasant to the north and east, the Hudson River to the west, and the Village of Tarrytown to the south. The village has an urban character. The village covers an area of approximately 2 square miles. The 2000 census population was 9,212.

The Town of Somers is in the northern portion of Westchester County. The town is bordered by the Town of Carmel on the north; the Town of North Salem on the northeast; the Town of Lewisboro on the east; the Town of Bedford on the southeast; the Town of New Castle on the southwest; and the Town of Yorktown on the west. Somers is approximately 42 miles northeast of New York City. Somers has an area of 32.05 square miles and a population of 18,346, as of the 2000 census.

The Village of Tarrytown is located in southwestern Westchester County. It is bordered by the Village of Sleepy Hollow to the north, the Town of Mount Pleasant to the east, the Village of Irvington and the Town of Greenburgh to the south, and the Hudson River to the west. The 2000 census population was 11,090.

Sunnyside Brook originates in the Town of Greenburgh, flows west through the Village of Irvington, then along the southern corporate limits of Tarrytown, and empties into the Hudson River. Sunnyside Brook has a steep drainage basin and an above-average runoff rate.

The Village of Tuckahoe is located in southern Westchester County, approximately four miles north of the New York City corporate limits. It is adjoined on the north and east by the Town of Eastchester; on the south by the Village of Bronxville; and on the west by the City of Yonkers. The village area is less than 1 square mile. The 2000 census population was 6,411.

With an area of 9.4 square miles, the City of White Plains is about 22 miles north of New York City's Grand Central Station and is in the south-central part of Westchester County. It is bordered on the north by the Town of North Castle, on the west by the Town of Greenburgh, on the south by the Town of Greenburgh and the Village of Scarsdale, and on the east by the Town of Harrison. The 2000 census population was 55,394.

Fulton Brook, once known as Randall's Brook, originates near Woodlands High School on Dalewood Hill in Greenburgh and flows southeast toward Central Park Avenue before turning parallel to this avenue and flowing northeasterly to its mouth at the Bronx River. Near its mouth, the brook forms the boundary between White Plains and Greenburgh. The drainage area of the brook at the Bronx River is 0.93 square mile, about 70 percent of which is in Greenburgh. From its source, the brook flows through a relatively undeveloped area at a 3.3-percent slope for about 4,000 feet, almost to Dalewood Drive. From there it flows through an intensely developed commercial area at a 0.5-percent slope for about 6,700 feet to its mouth. Prior to the 1920s, the latter part of the brook was a small watercourse flanked by low-lying ground. Since the 1920s the brook has been almost entirely built over in this area, so that now it flows through various culverts. The brook enters White Plains in the Dalewood Shopping Center.

The City of Yonkers is located in the lower portion of Westchester County, and is bordered by the Hudson River to the west; the Village of Hastings-on-Hudson and the Town of Greenburgh to the north; the Village of Scarsdale, the Town of

Eastchester, the Village of Tuckahoe, the Village of Bronxville, and the Cities of Mount Vernon and New York to the east; and the City of New York to the south. The City of Yonkers has an area of approximately 18.3 square miles and a population of 197,086, according to the 2000 census.

Tibbetts Brook is a small stream, which originates in the southeastern portion of the City of Yonkers and eventually flows out into Bronx County to the south. At the downstream limit of the detailed study, the basin has a drainage area of approximately 1.8 square miles and a slope of 57 feet per mile.

Troublesome Brook is another small stream, which originates north of the City of Yonkers in the Town of Greenburgh and flows south along Central Park Avenue to Crestwood Lake and eventually empties into the Bronx River. Above Crestwood Lake, the drainage area has been largely urbanized and for the most part has been placed in underground culverts. The area under detailed study in this report is the open channel flow section downstream side of Crestwood Lake. Previously effective detailed study information on the upstream side of Crestwood Lake has been superseded by this study as a result of significant discrepancies between the effective elevations and the county topography.

Grassy Sprain Brook is a small stream, which has its origin in the Town of Greenburgh. The brook flows south into the City of Yonkers along the New York State Thruway through residential areas, under Central Park Avenue and into the Bronx River. The drainage area at the downstream limit of the detailed study is 6.1 square miles. The stream slope averages 31.5 feet per mile. Development in the floodplain is limited to residential structures.

The Town of Yorktown is located in the northern portion of Westchester County. The town is bordered by the Towns of Putnam Valley and Carmel on the north; the Towns of Somers and New Castle on the east; the Town of New Castle on the south; and the Town of Cortlandt on the west. The Town of Yorktown is located approximately 38 miles north of New York City. The town has an area of 39.42 square miles and a 2000 census population of 36,318.

2.3 Principal Flood Problems

Records in Westchester County show that substantial flooding conditions have been experienced on the following dates: July 1889, October 1903, November 1927, March 1936, September 1938, September 1944, May 1946, March 1953, August 1955, October 1955, March 1962, May 1968, August 1971, June 1972 (10-year-frequency flood), September 1975, and September 1999. The National Oceanic and Atmospheric Administration (U.S. Department of Commerce, 1972) reports that 10 hurricanes caused damage in this area between 1901 and 1955. The hurricane event is often a major cause of flooding, because it tends to produce a sustained rainfall which saturates the soil, followed by a period of high rainfall intensity which, coupled with saturated soil conditions, produces the runoff volumes which lead to flooding.

Westchester communities have experienced floods during all seasons. Some have been associated with high stream stages, and others with high tidal stages. The most severe riverine floods in the past have been associated with intense rains caused by localized or transcontinental storms, land-falling hurricanes originating in the Caribbean Sea, or heavy rain falling on previously frozen or saturated ground.

The following discussion on hurricanes and northeasters is useful for understanding their relationship to tidal elevations in the vicinity. A hurricane develops as a tropical storm either near the Cape Verde Islands off the African coast, or in the western Caribbean Sea. Most hurricanes which reach the vicinity of New Rochelle approach from a southerly direction after recurving east of Florida, skirting the mid-Atlantic states and crossing Long Island. These hurricanes start their journey with a forward speed of approximately 10 miles per hour and, after recurving towards Long Island, may increase their speed to 20 to 30 miles per hour and even up to 40 to 60 miles per hour (USACE, 1973), as they reach the colder water temperatures found in the most northerly latitudes.

In meteorological terms, a hurricane can be characterized by low barometric pressures, high winds, torrential rain, and high waves accompanying tidal flooding. Barometric pressure falls rapidly as the center of a hurricane approaches and the velocity of the wind increases. The result is a pressure approximately 2 inches below the normal sea level pressure of 30 inches. This center of the hurricane, known as the eye (where winds are subdued), can vary in diameter. Normally, the eye can extend for 15 miles, although the eye of a mature hurricane can reach diameters of 20 to 30 miles or even greater. Winds in a hurricane in the Northern Hemisphere spiral inward in a counter-clockwise direction towards the eye or center of low pressure (P. S. Eagleson, 1970). A typical hurricane, when tracked along its actual path, will give an indication of wind direction in relation to New Rochelle.

The most destructive winds in a hurricane occur east of the eye, where the spiral wind movement and forward motion of the storm combine. For this reason, the actual track of a hurricane is very important because of the effect its high wind velocity region may have on Westchester County. Tidal levels along New Rochelle's coastline are greatly influenced by the force, duration, and direction of these winds, as well as the distance, or fetch, across open water over which the winds act.

The majority of the severe hurricanes of this century have tracked across the eastern end of Long Island. Even though these tracks of hurricanes are not in the immediate vicinity of Westchester County, their influence may be felt throughout Long Island Sound.

In order for the most intense part of a hurricane to affect Westchester County, its track must pass over western Long Island. Even though these tracks of hurricanes are not in the immediate vicinity of Westchester County, their influence may be felt throughout Long Island Sound.

In order for the most intense part of a hurricane to affect Westchester County, its track must pass over western Long Island. Hurricane Belle (August 10, 1976) is one such storm which did track across western Long Island, posing a potentially serious tidal flooding threat. However, the following two factors for this particular hurricane reduced the potential for tidal flooding: (1) its storm intensity was diminished after traveling beyond the Gulf Stream and passing more slowly over the colder north Atlantic Ocean waters, as evidenced by the increase in its central barometric pressure and an accompanying decrease in the sustained wind velocity, and (2) it made landfall several hours after expected high tides.

For their energy, hurricanes depend on the presence of warm water in their path which aids in the condensation of moisture. The critical water temperature for hurricanes is 81°F. When the water temperature is below this value, the transfer of energy from the ocean to the storm ceases. For Hurricane Belle, the temperature was approximately 84°F off the coast of Florida, 81°F off the coast of North Carolina, and 71°F off the coast of Long Island. The waters near Long Island would not be as cool a month or so later in the hurricane season and, therefore, would not have had the same effect in slowing the velocity of the hurricane (National Hurricane Center, 1976). Actually, a succession of temperate winters in the eastern United States (as has been experienced over the past few years) has raised the water temperature in the Atlantic Ocean to a level which can sustain a greater number of hurricanes and tropical storms (National Hurricane Center, 1976).

Hurricane Belle's winds were reduced, in part, by its slow northward movement of 25 miles per hour over the colder northern waters. In contrast, the hurricane of September 1938, which occurred at a later period in the hurricane season, moved north at approximately 50 miles per hour (National Hurricane Center, 1976). Hurricane Belle, with an eye 30 miles in diameter before it crossed western Long Island (U.S. Department of Commerce, 1976), offers proof that a similarly tracked hurricane with a greater forward velocity over the cold north Atlantic Ocean waters arriving at the time of high tide can create serious tidal flooding for Westchester County.

A northeaster storm can also produce high tide levels in Long Island Sound and along the coastline of Westchester County. This trend results from storm winds which blow out of the northeast and across the considerable fetch of Long Island Sound. The duration of a northeaster may be several days, and can result in high tidal elevations in the open waters of the sound as well as in the bays and inlets.

In the Village of Ardsley, along the Saw Mill River, the flood of record occurred with Hurricane Floyd of September 1999 (75-year-frequency flood). However, channel work undertaken by the USACE was successful in preventing the village from flooding the adjacent Saw Mill River Parkway.

Sprain Brook has suffered some flooding, but not to any large extent. However, floods of a large recurrence interval would result in damage to several residences and a school building. No figures are available for damages resulting from flooding on Sprain Brook.

In the Town of Bedford, the greatest historical flood occurred on the Stone Hill River in October 1955. However, information concerning the occurrence and magnitude of historic floods in this area is meager. Newspapers did point out the proportions of the 1955 flood, and indicate that it was far greater than any known to the oldest residents at that time (USACE, 1970).

In the October 1955 flood, the Stone Hill River flowed at a width of about 600 feet at Cantitoe Street, whereas normally the river is only 30 feet wide at this point. This flood also inflicted damage on the mill houses at the Millers Mill and Matthews Mill Dams. In October 1955, the water at the house at Matthews Mill Dam was about 3 feet higher than the top of the dam, and, in September 1975, it was 2.3 feet higher. During the 1955 flood, water flowed through the house at Millers Mill Dam just upstream of and about 4 feet above the top of the dam. The September 1975 flood did not cause significant damage to this house.

Excluding problems encountered at Matthews Mill Dam, no severe flood problems have been reported along the Stone Hill River, Brook "A", and David's and Pitch Swamp Brooks. At times, fallen logs collect debris washed down river and form dams which have caused minor flood problems.

Flooding on Mary's Brook at Harris Road forced the closing of the Saw Mill River Parkway in September 1975. During this storm, discharge in Mary's Brook exceeded the capacity of the culverts and narrow channels on the hill between Bedford Road and Cherry Street and resulted in pavement washouts on Park Avenue and Crescent Terrace. The extent of damage to houses in the area is not known.

The principal source of flooding in Bedford is the Mianus River. Its flat slope is not conducive to water conveyance from the level lowlands along its borders at a rate to accommodate runoff from heavy rainfall without flooding. In September 1975, the Mianus overflowed its east bank at Stamford Road. There was additional flooding southeast of the point where the river passes under Middle Patent Road. The October 1955 flood is said to have covered Greenwich Road, and the September 1975 flood also caused some flooding of property just downstream of Greenwich Road.

The stages (elevations) of the New Croton, Muscoot, and Cross River Reservoirs have never exceeded the levels reached on October 16, 1955. It was reported the Cross River Dam was vibrating under the high water pressure, and it was feared that the dam would fail. On October 16, 1955, the Cross River Reservoir stage was 334 feet, or 4.5 feet above the spillway and 2.5 feet above the top of the flashboards. On September 27, 1975, the stage was 330.8 feet, or 1.3 feet above the spillway. The Muscoot Reservoir reached the level of the Katonah water supply wet well located between the present and former Jay Streets. The stage at this point was approximately 208 feet. On October 16, 1955, the stage of the New Croton Reservoir was 205.4 feet, or 9.8 feet above the spillway and 3.8 feet above the top of the flashboards. The stage of the Muscoot Reservoir on that day was 206 feet, or 6.5 feet above the spillway. Because the stage of the New Croton

Reservoir was only 0.6 foot below that of the Muscoot Reservoir, which was well above its spillway, the Muscoot Dam was completely submerged, and the two reservoirs became one body of water. On September 27, 1975, the stage of the New Croton Reservoir was 198 feet (2.5 feet above the spillway), and that of the Muscoot Reservoir was 201.8 feet (2.3 feet above the spillway). After the 1955 storm, the 6-foot flashboards at the Croton Dam and the 2-foot flashboards at the Cross River Dam were removed; therefore, only a flood much more severe than the 1955 flood would result in a repetition of these high stages.

In the Village of Briarcliff Manor, historically, there have been numerous major storms which have occurred in Westchester County. However, because there are no discharge measurements available on either the Pocantico River or Caney Brook, it has been difficult to assess the importance of individual storms in Briarcliff Manor. From a number of interviews with village officials and individual residents, it appears that, in recent times, the major flood event on the Pocantico River occurred as a result of Tropical Storm Doria in August 1971. However, it has been reported that prior to this storm, the hurricane of August 1955, produced more severe flooding, including the inundation of Routes 9A and 100 in the southern part of Briarcliff Manor. Before 1955, major storm events undoubtedly occurred, but no information is available on their severity in Briarcliff Manor.

Although the Caney Brook and Pocantico River basins are adjacent, the same storm has not produced a similar degree of flooding in each basin or in other basins in Westchester County. A difference in observed rainfall patterns and degree of development from one area to another can account for this fact. In Caney Brook, the most severe flooding in the last 10 years occurred during the storm of September 1975, but produced little structural damage. No earlier data on flooding were available for Caney Brook.

Along the Hudson River, some of the major storms producing high river stages have occurred in the following years: February 1875, October 1903, March 1913, November 1950, October 1955, and September 1960 (USACE, 1975; W. G. Hoyt, 1955).

In the Village of Bronxville and Town of Eastchester, for the Bronx River, the maximum recorded discharge of 2,500 cubic feet per second (cfs) occurred in June 1972 during Hurricane Agnes, a storm event with an estimated return period of 50 years (New York State Department of Environmental Conservation, 1975; U.S. Department of the Interior, 1964). The next highest discharges occurred in September 1975 (New York State Department of Environmental Conservation, 1975) during Hurricane Eloise (2,190 cfs, 31 years estimated return period), and in July 1984 (2,170 cfs, 30 year estimated return period). Flooding, in general, does not affect property, but does cause major inconveniences to motorists traveling on the Bronx River Parkway, which has to be closed down during times of heavy rainstorms.

The Bronx River has caused flooding in the areas adjacent to its banks during severe storms. Areas especially prone to inundation are Paxton Avenue between

Palmer Avenue and Stone Place and the lower portions of Millburn Street and Stone Place. The properties along the southern section of Parkway Road adjacent to the Bronx River have suffered repeated inundation during high stages of the Bronx River, heightened somewhat at this location by the restrictive effects of the arched openings in the Metro North Railroad embankment crossing the river. The hospital parking lot north of Palmer Road is also subject to flooding during high stages of the Bronx River.

In the Village of Croton-on-Hudson, most of the damage is caused by poor downstream drainage and high-water stages on the Hudson River. Tropical Storm Doria in 1971, Hurricane Agnes in 1972, Hurricane Eloise in 1975 and Hurricane Floyd in 1999 have caused scattered flooding in the community. High stages on the Hudson River have occurred along the Hudson River several times this century. The flood of record on the Croton River occurred in October 1955, with a discharge of 45,400 cfs at the USGS gaging station at the New Croton Dam (U.S. Department of the Interior, 1968).

In the Village of Dobbs Ferry, the most severe floods in the past have been associated with intense rains caused by localized or transcontinental storms, land-falling hurricanes originating in the Caribbean Sea, or heavy rain falling on previously frozen or saturated ground. For the Saw Mill River, the maximum known stream flow of 1,450 cfs occurred in July 1984, as measured at the USGS gage at Yonkers, New York.

For the Hutchinson River, the maximum known streamflow of 810 cfs occurred during the hurricane of September 1938. This event had an estimated return period of approximately 100 years. The next highest recorded discharges occurred in August 1971 during Hurricane Doria (526 cfs, 19-year estimated return period.

The major flooding problems in Eastchester occur in areas where storm drains are inadequate. The Huntley-Mill outfall flows through a residential area which was once a golf course. During times of heavy rainfall, many basements of homes are inundated in an area centered around Darcy Lane, Hickory Hill Road, and Joan Road. The northeast outfall is affected by high stream stages in the Bronx River, an undersized culvert passing under the railroad embankment, and inadequate storm drains. Flooding in this area is not as widespread and is more localized at low points at street intersections. Both businesses and homes are affected by the high water.

In the Village of Elmsford, flood damages have occurred along the Saw Mill River south of Tarrytown-White Plains Road to business and industrial establishments. Particularly damaging were the floods of 1955, 1972, and 1975. Traffic was temporarily blocked at the Tarrytown-White Plains Road crossing during the 1975 flood.

In the Town of Greenburgh, historically, there have been numerous major storms which occurred in Westchester County. However, because there are no discharge measurements available on any of the streams and rivers in Greenburgh, it has been difficult to assess the importance of individual storms. From a number of interviews with village officials and individual residents, it appears that, in recent times, the major flood event in the community occurred as a result of Hurricane Eloise in September 1975.

In the Town of Harrison, severe flooding occurs along Brentwood Brook in the downtown area of the town. The construction of a concrete channel has eliminated the flooding problem downstream of the railroad culvert, where the 100-year flood is confined within the concrete channel.

Flooding problems along Beaver Swamp Brook occur for the most part in the area from the confluence of Brentwood Brook north to Osborne Road. The channel slope is mild, and the area is very swampy.

The most severe floods of record in the Brentwood Brook and Beaver Swamp Brook drainage basin occurred on January 21, 1979, November 9, 1977 and September 26, 1975, and had peak discharges of 288 cfs (a 90-year flood), 258 cfs (a 50-year flood), and 252 cfs (a 50-year flood), respectively. The floods of record were measured at the Beaver Swamp Brook USGS gaging station No. 01300500, located at Short Street in the Village of Mamaroneck, which has 46 years of record (1944 to 1989).

The majority of severe flooding problems along the Mamaroneck River occur downstream of the Town of Harrison. However, there is some flooding in Harrison between the New England Thruway and Winfield Avenue. The Mamaroneck River also floods upstream of the Mamaroneck Reservoir; however, this flooding is not substantial beyond the Hutchinson River Parkway.

The most severe floods of record in the Mamaroneck River Basin occurred on September 26, 1975 (4,260 cfs) and June 19, 1972 (3,800 cfs). These flows were recorded at USGS gaging station No. 01301000 located just downstream of Halstead Avenue in the Village of Mamaroneck, which includes the Sheldrake River flows. Flow for the June 19, 1972, flood was computed to be 2,590 cfs at the Winfield Avenue bridge by the USGS (U.S. Department of the Interior, 1976).

Flooding problems along Blind Brook are generally limited to areas upstream of culverts, where backwater occurs because of smaller flow areas within the culverts. The most severe floods of record in the Blind Brook drainage basin, as recorded at the USGS gaging station No. 01300000 at Rye, occurred on June 19, 1972 (2,320 cfs – a 50-year flood) and September 26, 1975 (2,280 cfs – a 40-year flood).

In the Town of Mamaroneck, a severe flooding problem exists along the Sheldrake River between its confluence with the East Branch Sheldrake River and Rockland Avenue. In recent years, flooding has been reported during the storms of August 1971 (Doria), June 1972 (Agnes), September 1974, September 1975 (Eloise), and September 1999 (Floyd). Eloise is considered to be the flood of record. The coastal areas of the town are prone to flooding by extraordinary high tides such as hurricane surges.

The worst coastal storm of record in the area was the September 21, 1938, hurricane, which produced a tidal elevation of 13.7 feet at the Willets Point, New York, tidal gaging station (period of record from 1931 to 1972) and a tidal elevation of 11 feet at the Stamford, Connecticut, tidal gaging station (period of record from 1938 to 1961). On August 31, 1954, Hurricane Carol produced the second highest tidal elevations of 11.4 feet and 10.3 feet at Willets Point and Stamford, respectively. The most severe northeaster in the area occurred on November 25, 1950, and resulted in the third highest tidal elevations of 9.7 feet and 9.5 feet at Willets Point and Stamford, respectively.

On both Fly Kill and Clove Brooks, residential buildings and their contents have been damaged by flooding. The higher velocities of Clove Brook have caused structural damage to buildings. An undersized culvert under the railroad embankment on the upper reach of Fly Kill Brook causes periodic flood damage to residences in the area.

In the City of New Rochelle, the city is subjected to flooding along its coastline with Long Island Sound, along the Hutchinson and Sheldrake Rivers, and along Burling and Stephenson Brooks.

The coastal flooding in New Rochelle is caused by northeasters and hurricanes. Northeasters can occur at any time of the year, but they are more prevalent in the winter months, whereas hurricanes occur in the late summer and early fall months.

Flooding occurs on the Sheldrake River in areas along Pine Brook Boulevard and Puritan Drive. Flooding occurs along Pine Brook Boulevard because the channel slope is mild (i.e., slope equals 0.002) and the overbank terrain is very flat. Flooding along Puritan Drive is the result of backwater caused by undersized private driveway culverts and inadequate channel capacity.

The worst floods on the Sheldrake River occurred on September 26, 1975, and June 19, 1972. No documentation of the flow rates was found in the area of New Rochelle.

In the Town of North Castle, research yielded no significant flood history for North Castle.

In the Town of North Salem, during meetings with government officials, flooding from the Titicus River and Crook Brook was cited in the establishment of study limits within the community. No specific problem areas were noted during these contacts.

The Hutchinson River frequently floods the Hutchinson River Parkway, causing traffic disruptions. High-water levels in the Hutchinson River affect the capacity of storm drains discharging into it, most notably the one in Colonial Avenue which has flooded the stretch west of Wolfs Lane, rendering it impassable to traffic. Low-lying lots along the foot of Marquand Place and along Wolfs Lane have experienced flooding during high stages of the Hutchinson River. Along

Branch 1 Hutchinson River, flooding has been reported along Highbrook Avenue between the railroad tracks and Washington Avenue due to the inadequate capacity of the Highbrook Avenue drain, causing this stream to back up. Flooding of basements and first floors due to inadequate storm drains has occurred at various locations throughout the village. An especially hard-hit area has been Seventh Avenue north of Sixth Street in Pelham.

During Hurricane Eloise, the Village of Pleasantville's swimming pool which lies along Nanny Hagen Brook adjacent to Lake Street, was inundated and damaged. Further downstream, flooding occurred at residences along Lake Street and Orbaek Lane. A retaining wall along Lake Street was undermined and damaged and flood waters from the brook pooled at the Broadway and Lake Street intersection rendering it temporarily impassable.

In the Town of Pound Ridge, the history of flooding in the vicinity of the town indicates that flooding may occur during any season of the year. Flooding and resulting damage has been reported in towns located near Pound Ridge, but research did not yield any reports of flooding or resulting damage within the town.

In the Village of Port Chester, major flooding within the village is the result of high discharges on the Byram River because of excessive rainfall, coastal flooding caused by northeasters and hurricanes, or a combination of the two. Northeasters can occur at any time of the year but are more prevalent in the winter months, whereas hurricanes occur in the late summer and early fall months.

Blind Brook and Beaver Swamp Brook have also had major flooding during this period. Some of the larger events occurred in July 1938, September 1944, October 1955, March 1962, June 1972, and September 1975. Hurricane Agnes in June 1972, produced the largest flow ever recorded at the Blind Brook gage, and the 1975 storm discharge was only slightly smaller. The 1972 storm has a frequency of about 60 years. These storms caused extensive damage to houses, yards, streets, and public buildings along the stream. Sediment, debris, and water ruined furnishings and inventories, and clogged bridges and culverts, but fortunately no lives were lost. The Beaver Swamp Brook gage recorded the largest flow of its history during the 1975 storm. Flooding along Blind Brook is caused by narrow channel width, obstructions, inadequate bridge openings, and in the lower reaches, by tidal backwater. Flooding along Blind Brook is caused by narrow channel width, obstructions, inadequate bridge openings, and in the lower reaches, by tidal backwater. Flooding along Beaver Swamp Brook is caused primarily by low-lying adjacent lands.

In the Village of Rye Brook, Blind Brook and East Branch Blind Brook are prone to flooding at various places in the Town of Rye. The areas subject to flooding are immediately upstream of road culverts where constrictions cause backwater. The most severe problems on Blind Brook occur at the Bowman Avenue, Westchester Avenue, Lincoln Avenue, and Brookside Way culverts. The most severe problems on East Branch Blind Brook occur at the Rye Ridge Apartment complex, Ridge Boulevard, Argyle Road, and Acker Drive culverts.

In the Village of Scarsdale, the Sheldrake and Hutchinson Rivers, and South Fox Meadow Brook, have all caused residential flooding in the past. Flooding on the Bronx River is limited to inundation of the Bronx River Parkway in the areas of Fenimore Road and Popham Roads.

The worst flooding on record occurred in September 1975, when the village was subjected to 10.84 inches of rain from September 19 to September 27. On Friday, September 26, 4.20 inches of rain fell between 9:00 a.m. and 6:00 p.m., with 2.2 inches falling in the 3-hour period between 10:00 a.m. and 1:00 p.m. (U.S. Department of Commerce, 1975). Because the ground was already saturated and most streams and rivers were flowing full from the previous week of rain, almost all of this rainfall resulted in direct runoff, causing severe flooding throughout the village. This storm had a recurrence interval of 28 years on the Bronx River, and 50 years on South Fox Meadow Brook.

Scarsdale was also subjected to widespread flooding in 1972 when Hurricane Agnes dumped 6.2 inches of rain on the village between June 16 and June 19 of that year. Other than these two major flooding events, the only documented historical flood occurred on March 12, 1962, when rainfall and snowmelt, coupled with frozen ground, resulted in flooding along South Fox Meadow Brook. The USGS has operated gaging stations on the lower reaches of the Sheldrake, Hutchinson, and Bronx Rivers, and records of these stations show historical peak discharges. However, there is no way to determine if these peak flows resulted in flooding within Scarsdale.

For the Sheldrake River, the worst flooding has historically occurred along Seneca, Cayuga, and Oneida Roads. The river here is very flat and once it tops its banks, flooding occurs over a wide area. Damage is usually limited to flooded basements and roads. Homes in the area of Brookby Road have also been subjected to basement flooding from this waterway.

The worst flooding along South Fox Meadow Brook occurs in the area between Rugby Lane and the upper end of George Field Park, where the brook passes through a series of culverts from Oxford Road to Cooper Green. During periods of high runoff, this culvert system is unable to handle peak discharges, resulting in the topping of Oxford Road and flooding of the depressed area bounded by Rugby Lane, Cambridge, Greendale, and White Plains Post Roads, and the northern edge of George Field Park. Homes in the area are subjected to frequent basement flooding, and at least one home on Greendale Road suffers flooding resulting from back-up of the storm sewer system. The other area on South Fox Meadow Brook where homes have flooded in the past is in the vicinity of Ogden and Paddington Roads, Church Lane, and Brite Avenue. The main problem is flooding of streets and basements. In addition to flooding which threatens homes, South Fox Meadow Brook frequently inundates Butler Field, Harwood Park, and Brewster Road in the vicinity of the Scarsdale High School. Here the brook is extremely flat, and the culverts under the high school and library driveways have become clogged with silt and debris, limiting the passage of water during peak discharge periods. This situation is aggravated by the stone wall downstream of Harcourt Road, which severely constricts flow.

In the Village of Sleepy Hollow, the village officials have indicated that flooding results mainly from hurricanes. Most of the damage is caused by flooding from the Hudson River due to poor downstream drainage and high water stages. Tropical Storm Doria in 1971 and Hurricane Agnes in 1972 caused $23,000 and $165,000, respectively, worth of scattered damage throughout the village. These estimates were given to the USACE by the village engineer during a damage assessment survey. Area flooding also occurred as a result of Hurricane Eloise in 1975. No frequency occurrence was given to these three flood events.

In the Town of Somers, during meetings with government officials, flooding from Muscoot River, Plum Brook, Plum Brook Tributary 1, and Brown Brook was cited in the establishment of study limits with the community. No specific problem areas were noted during these contacts.

In the Village of Tarrytown, the village officials have indicated that flooding results mainly from hurricanes. Most of the damage is caused by flooding from the Hudson River due to poor downstream drainage and high water stages.

In the City of White Plains, the Bronx River is a flat river throughout most of its course, but is especially flat in White Plains. Even in its natural state, the river would frequently flood outside its banks, but this flooding has assumed much larger proportions as development in the drainage area has increased. Except for some places in the lower portion of Westchester County, however, Bronx River flooding has caused no damage to real estate, although it frequently makes portions of the Bronx River Parkway impassable. Although flood problems along the river have been studied extensively, few, if any, of the recommended improvements to the river's water-carrying capacity have been implemented (Malcolm Pirnie Engineers, 1975; James C. Harding, 1945; Bronxville Flood Control Committee, 1976; Westchester County Department of Public Works, 1942; Hazen and Sawyer, 1959; USACE, 1971; U.S. Engineer's Office, 1942; USACE, 1968).

Flooding along the Bronx River occurs near Fisher Lane because of backwater produced by the diversion of the river through a narrow cut in a ledge about 1,000 feet downstream.

In its natural state, Fulton Brook caused no flood damage but, as its drainage area was developed and its banks were built up, the flooding problem became severe. The increase in impervious area due to the building of houses and streets increased the rate and amount of water runoff reaching the brook. Confinement of the brook in culverts and between buildings did not allow enough space for this excess water and, since the mid 1920s, flooding has been common in this area. Sediment and debris have reduced the water-carrying capacity of culverts to such an extent that, in recent years, an intense cloudburst lasting only a short time has been enough to cause flooding. Backwater along the Bronx River causes flooding along the brook downstream of County Center Road.

In the City of Yonkers, historically, there have been numerous major storms which occurred. However, because there are no discharge measurements available on any of the streams and rivers in Yonkers, it has been difficult to assess the importance of individual storms. From a number of interviews with city officials and individual residents, it appears that, in recent times, the major flood event in the community occurred as a result of Hurricane Eloise in September 1975. Along the Hudson River, some flooding of buildings occurred during 1955.

For the smaller streams in Yonkers, flooding damage has been confined mostly to building contents and personal effects rather than to the structures. On Tibbetts Brook, the flooding problems result from the flat stream slope combined with a severe constriction in the stream at a railroad bridge. This small opening is easily blocked by debris. Troublesome Brook above Crestwood Lake periodically floods the surrounding apartment buildings. Again, a narrow channel, bridge constrictions, and encroachment into the floodplain have aggravated the problem. Grassy Sprain Brook is controlled to a large extent by the backwater from the Bronx River. A number of residences and apartment buildings are flooded by the brook.

In the Town of Yorktown, flooding in the area of Main and East Main Streets by Shrub Oak Brook Tributary 1 was reported. Reconnaissance indicated that this area is subject to flooding by backwater of Shrub Oak Brook.

2.4 Flood Protection Measures

In the Village of Ardsley, currently, there are no structural measures of flood protection for the Village of Ardsley. Prior to 1972, the New York State Department of Public Works realigned and widened portions of the Saw Mill River and constructed culverts and retaining walls during construction of the New York State Thruway.

In the Town of Bedford, although no structural flood protection measures in Bedford have been implemented in the past or are planned for the period through September 1978, the town has adopted a Wetlands Ordinance based on the Town of Bedford Official Wetlands Map (Town of Bedford, 1972). This ordinance not only purports to restrict development in all wetlands and floodplains within the town but, also, in so doing, proposes to reduce significantly the potential risk to life and property from severe flooding. The town development plan (Frederick P. Clark Associates, 1972) recommends that all undeveloped areas in the wetlands and floodplains of Bedford be maintained free of development and, wherever possible, be used for parks, walking and bridle paths, and nature sanctuaries and conservancies.

The Village of Briarcliff Manor has a Wetlands Ordinance (passed in 1973) which provides for the protection and control of wetlands, waterbodies, watercourses, and flood hazard areas. The village also has an official Wetlands Control District Map. Having these wetlands areas, limited development in the upper portions of the watersheds, and minimal encroachment into the 100-year floodplains have all combined to produce nonstructural measures which minimize the amount of damage which could occur from flooding.

In the Village of Bronxville, at present no major flood protection measures have been undertaken along the Bronx River to alleviate high stream stages such as were caused by the floods of record. The USACE's 1968 report (USACE, 1968) did not formulate a plan for improvements, on the basis that the flood damages were too widely scattered to justify any system of flood works. The Bronx River does have some flow regulation benefits accruing from the Kensico Reservoir on the main stem of the river at North Castle, and at the Grassy Sprain Reservoir on the Grassy Sprain Brook, a tributary to the Bronx River in Yonkers. Together these two water supply reservoirs divert the entire flow from 18.1 square miles of drainage area out of the total of 44.6 square miles of drainage area tributary to the Bronx River at the USGS gage in Bronxville.

A flood warning system for the Bronx River is operated jointly by the U.S. Weather Bureau in New York City and the River Forecast Center in Hartford, Connecticut. The full responsibility rests with the River Forecast Center. During floods or potential flood periods, the Forecast Center issues, at 24-hour intervals or as may be necessary, an appropriate forecast of the high water elevations that may be expected at the stream gaging station maintained by the USGS on the Bronx River at Bronxville. The Center disseminates the information to the State Police and to Civil Defense Organizations. These forecasts are also forwarded by the Center in Hartford to the Weather Bureau for dissemination to the media.

For the Villages of Croton-on-Hudson, Elmsford, Hastings-on-Hudson, and Sleepy Hollow; the Towns of Greenburgh and Mamaroneck; and the Cities of New Rochelle, Peekskill, and White Plains, there are no major flood protection structures.

In the Village of Dobbs Ferry, at the present time, no flood protection projects have been requested or identified that would relief the existing level of flooding along the Saw Mill or Hudson Rivers. There is no organized official flood warning system in the Saw Mill River Basin, or along the Hudson River. Residents of the floodplain areas generally become aware of possible flooding through the television, radio and newspaper, which transmit forecasts by the National Weather Service of approaching hurricanes or of storms of high intensity or long duration.

In the Town of Eastchester, the Town Planning Board requires that all developers prepare drawings showing all existing and proposed drainage facilities. The current zoning law does not contain any restrictions to building in the floodplain.

The Town of Greenburgh had engaged a consultant, Daniel Frankfurt, Inc., to design flood protection works for Manhattan Park Brook. These flood protection works have been completed and result in containing the 100-year flood in the channel, from Kensico Aqueduct to County Center Road.

In 1942, the Town of Rye constructed a flood control dam on Blind Brook just upstream from the confluence of the East Branch Blind Brook. The flood protection capability of this dam affects the small portion of the Town of Harrison located along Blind Brook. There are no other flood protection facilities along any watercourses in Harrison; however, the town has adopted zoning ordinances and building codes to control building in the floodplain areas. These zoning ordinances require new commercial and residential developments to provide stormwater detention for all storms ranging from a 2-year to 100-year frequency for the purpose of offsetting adverse impacts to downstream property owners.

On the local level, there are no zoning regulations currently in force that would regulate floodplain development. The Village Planning Board does review subdivision plans and can ask for submission of back-up data relating to drainage matters.

In the Village of Irvington, to alleviate flooding problems along the upper reaches of Sunnyside Brook, the village has required the construction of a flood control pond on Sunnyside Brook in conjunction with the construction of a condominium development project. The effects of that project have been incorporated in this study.

The Village of Mount Kisco and the Towns of North Salem, Somers, and Yorktown do not maintain any structural flood control measures but does provide for the cleaning of drainage structures and culverts on a periodic basis. The village also regulates land use in the floodplain areas.

The Town of Mount Pleasant does have a Wetlands Control Ordinance in effect, and has revised its building code and zoning ordinance to meet the requirements of the NFIP.

In the City of Mount Vernon and the Villages of Tarrytown and Tuckahoe, as of this time, no major flood protection measures have been undertaken along the Bronx or Hutchinson Rivers to alleviate high stream stages such as were caused by the floods of record.

The current city zoning regulations do not delineate any flood zones or restrict land use in the floodplains adjacent to the Hutchinson and Bronx Rivers.

In the Town of New Castle, the town has passed a wetlands ordinance which restricts the removing and depositing of material and construction of buildings into, within, or upon any wetland, waterbody, and watercourse. This also includes any area within 40 feet of these controlled districts. In addition, New Castle has regulations pertaining to lots which are partly under water or subject to periodic flooding, special requirements for the maintenance of utility and storm water easements and rights-of-way, and other requirements for the calculation of drainage facilities based on a 100-year storm. Complete topographical, hydrological, and hydraulic data must be submitted to the town planning board before subdivision approval can be obtained.

In the Town of North Castle, no flood protection structures currently exist or are planned along any of the streams studied by detailed methods within the town. Nonstructural methods of flood protection are currently used to aid in the prevention of future flooding. The community adheres to and implements the minimum standards for floodplain management as outlined in the NFIP regulations.

There are no major flood protection measures in the Town of Ossining. The New Croton Reservoir, located approximately 2.2 miles upstream of the Ossining corporate limits, is operated for water supply but provides some flood storage benefits for the Croton River. There are no flood protection measures within the Village of Ossining. Ossining Reservoir, which is inside the village, feeds a tributary to Kil Brook which has several culvert-type structures along its length. The reservoir may provide minimal flood storage but was not intended or constructed for flood protection.

In the Town of Pound Ridge, there are no flood protection structures existing or planned along any of the streams studied by detailed methods. Nonstructural measures of flood protection are currently used to aid in the prevention of future flooding. The community currently adheres to and implements the minimum standards as set forth in the NFIP.

In the Village of Port Chester, no flood-control measures have been constructed which would either prevent or reduce the impact of flooding. Seawalls and bulkheads have been constructed along sections of the shoreline to prevent erosion.

In the Villages of Pelham and Pelham Manor, at this time, no major flood protection measures have been undertaken along the Hutchinson River to alleviate high stream stages such as were caused by the floods of record.

There are no other flood protection facilities along Blind Brook or East Branch Blind Brook, though, the Town of Rye, on April 16, 1974, adopted zoning ordinances and building codes to control building in the floodplain.

In the Village of Pleasantville, the Village Planning Board reviews all subdivision activities with regard to drainage. The Planning Board in some instances requires that drainage easement right-of-ways be set aside. On large subdivisions, the developer is required to construct on-site retainage facilities in order that no additional runoff occurs due to the new development.

In the City of Rye, few man-made flood protection measures have been built in the area. Some breakwaters and walls have been built along the coast to protect beaches, marinas, etc., against wave action but are overtopped during tidal storms. Walls have been built along the streams in several areas but serve only to protect the banks from erosion.

In the Village of Rye Brook, the City of Rye, in 1942, constructed a flood control dam on Blind Brook just upstream from the confluence with East Branch Blind

Brook in the Town of Rye. The flood protection capability of this dam affects the small portion of the town on Blind Brook downstream of this dam.

In the Village of Scarsdale, other than occasional clearing of debris from the channels of South Fox Meadow Brook, and the Sheldrake and Hutchinson Rivers, no flood protection measures have been taken.

Pocantico Lake, which is located in the Town of Mount Pleasant, feeds Pocantico River, which has several small dam-spillway type structures along its course through the Village of Sleepy Hollow. The lake and the structures may provide minimal flood storage but were not intended or constructed for flood protection purposes.

The principal non-structural measure which has been taken, not to reduce floods but to reduce flood damage, has been to designate most of the river's floodplain as county parkland.

In the City of Yonkers, to alleviate flooding problems along the Saw Mill River, the USACE has completed three flood control projects, which included construction of rectangular and trapezoidal channels, channel widening and channel dredging. These improvements have been incorporated in this study with the resultant reductions in flood elevations.

On Troublesome Brook, a diversion was designed to take the majority of the flow directly to the Bronx River, just downstream of Crestwood Lake, near St. Eleanors Lane.

The USACE has completed design studies for another flood control project in the Nepera Park area along the Saw Mill River.

3.0 ENGINEERING METHODS

For the flooding sources studied in detail in the county, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this FIS. Flood events of a magnitude which are expected to be equaled or exceeded once on the average during any 10-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for floodplain management and for flood insurance rates. These events, commonly termed the 10-, 50-, 100-, and 500-year floods, have a 10-, 2-, 1-, and 0.2-percent chance, respectively, of being equaled or exceeded during any year. Although the recurrence interval represents the long term average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood which equals or exceeds the 100-year flood (1-percent chance of annual exceedence) in any 50-year period is approximately 40 percent (4 in 10), and, for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the county at the time of completion of this FIS. Maps and flood elevations will be amended periodically to reflect future changes.

3.1 Riverine Hydrologic Analyses

Hydrologic analyses were carried out to establish peak discharge-frequency relationships for each riverine flooding source studied by detailed methods affecting the community.

For each community within Westchester County that had a previously printed FIS report, the unrevised hydrologic analyses described in those reports have been compiled and are summarized below.

Precountywide Analyses

In order to provide a national standard without regional discrimination, the 1-percent annual chance flood has been adopted by FEMA as the base flood for purposes of flood plain management. This flood has a 1-percent chance of being equaled or exceeded each year and is expected to be exceeded once on the average during any 100-year period. The risk of having a flood of this magnitude or greater increases when periods longer than 1 year are considered. For example, over a 30-year period, there is a 26 percent chance of experiencing a flood equal to or greater than the 1-percent annual chance flood. The 0.2-percent annual chance flood plain is also shown on the FIRM to indicate areas of moderate flood hazards.

Areas inundated by the 1-percent annual chance flood are shown as A and AE zones on the county's FIRM. It is in these areas that the FEMA requires local communities to exercise flood plain management measures as a condition for participation in the National Flood Insurance Program.

For Gedney Brook and the Kisco River in the Town of New Castle, discharge-frequency relationships were determined according to the relationships developed in Special Report No. 38 (USGS, 1974) as follows:

$$Q_{10} = 54A^{0.88} S^{0.27} St^{-0.53} I^{0.20}$$

$$Q_{50} = 104A^{0.85} S^{0.26} St^{-0.51} I^{0.16}$$

$$Q_{100} = 136A^{0.84} S^{0.26} St^{-0.51} I^{0.14}$$

where

Q_T = peak discharge for T-year recurrence interval, in cubic feet per second.

A = drainage area in square miles.

S = main-channel slope, in feet per mile, defined as the average slope of the main channel between two points 10 and 85 percent of the distance upstream from the runoff site to the watershed boundary.

St = surface storage index, in percent of drainage area occupied by lakes and swamps and increased by 1.00 percent.

I = index of manmade impervious cover, in percent, which can be determined for existing and future development conditions from population data and projections by use of the relation: $I = 0.117D^{0.792-0.039 \log D}$; $1\% \leq I \leq 100\%$

where

D = basin population density in persons per square mile.

For Branch 2 Kisco River, discharge-frequency estimates were determined by the Rational Method, which is defined as follows:

$$Q = CiA$$

where

Q = discharge in cubic feet per second
C = runoff coefficient estimated at 0.3
i = intensity of rainfall in inches per hour
A = tributary drainage area in acres

To establish a discharge-frequency relationship of Manhattan Park Brook, Riverview Road Brook, and Sprain Brook several hydrologic methods were examined. None of the streams are a gaged stream, therefore a direct analysis of stream gaging records was not possible. The Magnitude and Frequency of Floods in New Jersey with Effects of Urbanization, was applied by using the basin concept (USGS, 1974). This method was found to give discharge-frequency relationships which would account for the storage available in the basins and would also account for the impervious cover in the highly urbanized Westchester County area.

The Hudson River has a tidal gage at Spuyten Duyvil, New York, which is observed and recorded by the Corps of Engineers, New York District (USGS Gage No. 88). The gage record has been analyzed by the Corps of Engineers and a stage-frequency relationship has been established. The rising and falling of the mean high tide correlates well with changes in the river width. A similar effect on high river stages would also be expected, and the elevation-frequency profiles should reflect this effect. The most reasonable elevation-frequency profiles were found by establishing the maximum and minimum possible slopes of the profiles between Spuyten Duyvil and Catskill for each recurrence interval and estimating the position of the final profile between these envelope profiles. An attempt was made to take into account both the magnitude of the recurrence interval and variations in the mean high tide.

The hydrologic analysis for the Kisco River was based on methods developed by the USGS and considered watershed characteristics as well as population data for the study area.

For Kisco River Tributary 1 discharges were determined using a regression analysis prepared in accordance with methods developed by the Federal Highway Administration (FHWA) (FHWA, 1977). The analysis considered the hydrophysiographic characteristics of the study area as well as statistical rainfall information.

For Laurel Brook and Branch 1 Hutchinson River, no flood-flow frequency analyses were required or made for the purpose of delineating the flood boundaries for the 1-percent annual chance recurrence-interval flood. Flood heights were directly determined from a regression formula developed by the USGS for the Lower Hudson River Basin (USGS, 1975).

The flood-frequency discharge values for Bear Gutter Creek, Tributary 1 to Wampus River, Tributary 2 to Wampus River, Tributary 3 to Wampus River and the Wampus River were determined using a procedure presented in Soil Conservation Service (SCS) Technical Release No. 55 (SCS, January 1975). This procedure relates basin characteristics such as drainage area, 24-hour rainfall, rainfall distribution, soil cover, time of concentration, and travel time to develop peak discharges. The peak discharges for specific recurrence intervals were developed by either a graphical or tabular method based upon drainage basin subarea size.

Peak discharges for the Crook Brook, Hallocks Mill Brook, Hallocks Mill Brook Tributary 1, Hallocks Mill Brook Tributary 2, Muscoot River, Saw Mill Creek, and Titicus River were developed using a regression analysis performed using methods recommended by the Federal Highway Administration (Federal Highway Administration, October 1977). The analysis considered the characteristics of drainage basins tributary to the respective streams including slope, stream length, ground cover and storage area as well as rainfall data specific to the study area.

Flood-frequency discharge values for Mill River, Tributary to Mill River, and Tributary to Laurel Reservoir were determined using procedures outlined in Water Resources Investigations 79-83 (USGS, July 1979). This procedure relates drainage area and storage percent to a series of regression equations for the southeast region. Discharges were computed for specific recurrence intervals by substituting the applicable values into the corresponding regressions equations.

Peak discharges for Annsville Creek and Peekskill Hollow Brook were determined using a regional regression analyses developed by the USACE for the upper Delaware and Hudson River basins (UASCE, December 1974). Discharges developed by this method were verified with historical data at the pump house dam on Peekskill Hollow Brook.

For Lecount Creek and West Branch Blind Brook two regional analysis methods were used to compute peak discharges. The first, a USGS methodology, used gage data throughout New York State to formulate regression equations for use on ungaged streams (USGS, 1979). The second, the Stankowski method, used the parameters of drainage area, channel slope, and impervious area in regression equations. Peak discharges were also computed using an SCS method.

For Knollwood Brook discharge-frequency relationships were determined according to the relationships developed in USGS Special Report No. 38 (USGS, 1974) as follows:

$$Q_{10} = 54A^{0.88} S^{0.27} St^{-0.53} I^{0.20}$$
$$Q_{50} = 104A^{0.85} S^{0.26} St^{-0.51} I^{0.16}$$
$$Q_{100} = 136A^{0.84} S^{0.26} St^{-0.51} I^{0.14}$$

where

Q_T = peak discharge for T-year recurrence interval, in cubic feet per second;

A = drainage area in square miles;

S = main channel slope, in feet per mile, defined as the average slope of the main channel between two points that are 10 and 85 percent of the distance upstream from the runoff site to the watershed boundary;

St = surface storage index, in percent of drainage area occupied by lakes and swamps and increased by 1.0 percent;

I = index of manmade impervious cover, in percent, which can be determined for existing and future development conditions from population data and projections by use of the relation:

$$I = 0.177D^{0.792-0.039 \log D}; \quad 1\% \leq I \leq 100\%$$

where

D = basin population density in persons per square mile.

USGS gaging station (No. 01209700) on the Norwalk River in South Wilton, Connecticut, 14.5 miles east-southeast of the Sawmill River Parkway bridge over the Stone Hill River, is used to measure the discharge from a 30 square-mile drainage area which is similar to the 20.5 square-mile drainage area of the Stone Hill River. A log-Pearson Type III statistical analysis were applied to the twelve annual peak discharges recorded at this gage between 1964 and 1975 to determine the 10-, 2-, 1-, and 0.2-percent annual chance discharges (Water Resources Council, March 1976). These discharges were reduced on the basis of cubic feet per second per square mile (cfsm) to obtain the discharges used for Stone Hill River and Mary's Brook. Resulting discharges for the drainage area upstream on Route 137 on the Stone Hill River were further reduced 40 percent to reconcile the discharges with information concerning the flood of September 1975. Discharges used for David's and Pitch Swamp Brooks are 15-percent reductions of the Norwalk River discharges. These further reductions reflect slopes which are flatter and storage areas which are relatively more extensive than those of the Norwalk River drainage area.

Information on the methods used to determine peak discharge-frequency relationships for the streams restudied as part of this countywide FIS is shown below.

Countywide Analyses

For ease of use, information on the methodology used to study different streams is organized based on 11-digit Hydrologic Unit Code (HUC). The USGS has developed the 8-digit HUC system as a hierarchical classification system of hydrologic drainage basins in the United States. The New York State Department of Environmental Conservation, in conjunction with the USGS, and the Natural Resources Conservation Service (NRCS) of the United States Department of Agriculture, developed 11- digit HUCs for classification at the subwatershed level.

The HUC hierarchy corresponds to codes with 2, 4, 6, 8 and 11 digits. In decreasing area (increasing number of digits in the HUC) order each is made up by several of the contiguous watersheds of lower hierarchy. The first two digits of the HUC are the code for the Regional Boundary (e.g., 02, for the Mid-Atlantic Region). The next two digits of the HUC are the code for the Subregional boundary (e.g., 0202, Upper Hudson). The next two digits are the code for the Accounting Unit (e.g., 020200, the Upper Hudson basin). The next two digits of the HUC are the Cataloging Unit (e.g., 02020004, Mohawk). The last three digits of the HUC are the code for the NRCS Watershed Boundary (e.g., 02020004390, Stony Clove).

In Westchester County, revised analyses were performed in some portion of the following HUC 11 units:

02030102020-Bronx River
02030102030-Bronx River to Mamaroneck
02030102040-Mamaroneck River
02030102060-Blind Brook
02030101130-Lower Croton River
02030101150-Croton River to Harlem River
01100006350-Mianus River
01100006430-Lower Byram River

02030102020-
Bronx River: An updated log-Pearson Type III analysis was performed on the 47 years of record available at the USGS stream gage 01302000 on the Bronx River at Bronxville to determine peak discharges at the gage for the 10-, 2-, 1-, and 0.2-percent annual chance discharges. Drainage area transposition was then utilized to determine peak discharges for the selected recurrence intervals at the study reach limits and upstream of confluences with tributaries. The exponents used in the drainage area transposition calculation were obtained from WRI 90-4197 (Lumia, 1990).

Furnace Brook: Peak discharges for the selected recurrence intervals were developed using regional regression equations for calculating flood frequency on rural, unregulated streams as presented in USGS Water Resources Investigations Report 84-4350 (Stedfast, 1986). These older regression equations were used after examination of the current regression equations yielded the fact that the full version of the equation in WRI 90-4197 overestimated the peak discharge for watersheds with less than 5% storage.

Peekskill Hollow Brook Tributary: Peak discharges were developed using the USACE HEC-1 Flood Hydrograph computer program (USACE, 1991). Input model parameters such as sub-basin delineation and Time of Concentration calculation were developed using the GIS base map data provided by Westchester County GIS. A storage versus elevation curve was constructed from a preliminary HEC-RAS model to locate areas where significant storage may occur. A Clark hydrograph was used to derive the runoff hydrograph for each subbasin and was calibrated to match the 1% annual peak discharges calculated by the rational method.

South Fox Meadow Brook: Peak discharges were developed using the USACE HEC-1 Flood Hydrograph computer program (USACE, 1991). Input model parameters such as sub-basin delineation and Time of Concentration calculation were developed using the GIS base map data provided by Westchester County GIS. A storage versus elevation curve was constructed from a preliminary HEC-RAS model to locate areas where significant storage may occur. Curve numbers for each subbasin in HEC-1 were calibrated to the 1% annual chance discharges derived from the rational method. Other flood recurrence interval peak discharges were calculated from the calibrated model by changing the rainfall depths.

Mohegan Outlet: Peak discharges were developed using the USACE HEC-1 Flood Hydrograph computer program (USACE, 1991). Input model parameters such as sub-basin delineation and Time of Concentration calculation were developed using the GIS base map data provided by Westchester County GIS. The NRCS curve number methodology was used to determine peak discharges for each sub-basin. The discharges were then combined, lagged, and routed to determine downstream peak discharges.

Troublesome Brook Reach 1: For the newly studied reach, downstream from Crestwood Lake, New York State regional regression equations for peak discharge estimation were used as presented in USGS WRI 84-4350 and then modified by an urban watershed correction as described in USGS Water Supply Paper 2007 (Sauer, 1983). A flow split was calculated above St. Eleanors Lane where a relief pipe diverts flow into the Bronx River.

Grassy Sprain Brook: Peak discharges for the selected recurrence intervals were developed using regional regression equations for calculating flood frequency on rural, unregulated streams as presented in USGS Water Resources Investigations Report 84-4350 (Stedfast, 1986) and then modified by a nationwide urban correction equation as described in USGS Water Supply Paper 2007 (Sauer, 1983).

Clove Brook: While several hydrologic methods were evaluated, the effective method of using New Jersey Special Report 38, The Magnitude and Frequency of Floods in New Jersey with Effects of Urbanization, was applied by using the basin concept (Stankowski, 1974). This method was found to give discharge-frequency relationships which would account for the storage available in the basins and would also account for the impervious cover in the highly urbanized Westchester County area.

02030102030-
Hutchinson River: An updated log-Pearson Type III analysis was performed on the 46 years of record available at the USGS stream gage 01301500 on the Hutchinson River at Pelham to determine peak discharges at the gage for the 10%, 2%, 1% and 0.2% annual chance discharges. In the immediate vicinity of the gage, drainage area transposition was utilized to determine peak discharges for the selected recurrence intervals. Above the reservoir, peak discharges were developed using the USACE HEC-1 Flood Hydrograph computer program (USACE, 1991). Input model parameters such as sub-basin delineation and Time of Concentration calculation were developed using the GIS base map data provided by Westchester County GIS. A storage versus elevation curve was constructed from a preliminary HEC-RAS model to locate areas where significant storage may occur. A Clark hydrograph was used to derive the runoff hydrograph for each subbasin and was calibrated to match the 1% annual peak discharges calculated by the rational method.

Nelson Creek: Discharge-frequency estimates were determined by the Rational Method, which is defined as follows:

$$Q = CiA$$

where

Q = discharge in cubic feet per second
C = runoff coefficient estimated at 0.3
i = intensity of rainfall in inches per hour
A = tributary drainage area in acres

Highland Avenue Brook: Peak discharges for the selected recurrence intervals were developed using the Rational Method. The 0.2% annual chance flood discharge was extrapolated from a recurrence interval versus discharge log-probability relationship.

02030102040-
Mamaroneck River Lower Reach: An updated log-Pearson Type III analysis was performed on the 45 years of record available at the USGS stream gage 01301000 on the Mamaroneck River at Mamaroneck to determine peak discharges at the gage for the 10%, 2%, 1% and 0.2% annual chance discharges. Drainage area transposition was then utilized to determine peak discharges for the selected recurrent intervals at the study reach limits and upstream of confluences with tributaries. The exponents used in the drainage area transposition calculation were obtained from WRI 90-4197 (Lumia, 1990).

Mamaroneck River Upper Reach: Peak discharges were developed using the USACE HEC-1 Flood Hydrograph computer program (USACE, 1991). Input model parameters such as sub-basin delineation and Time of Concentration calculation were developed using the GIS base map data provided by Westchester County GIS. A Clark hydrograph was used to derive the runoff hydrograph for each subbasin and was calibrated to match the 1% annual peak discharges calculated by the rational method. The preliminary HEC-RAS model was used to develop a stage-storage relationship for the wetland upstream of East Main Street.

East Branch Mamaroneck River: Peak discharges were developed using the USACE HEC-1 Flood Hydrograph computer program (USACE, 1991). A Clark hydrograph was used to derive the runoff hydrograph for each subbasin and was calibrated to match the 1% annual peak discharges calculated by the rational method.

Sheldrake River: New York State regional regression equations for peak discharge estimation were used as presented in USGS WRI 84-4350 and then modified by an urban watershed correction as described in USGS Water Supply Paper 2007 (Sauer, 1983).

East Branch Sheldrake River: New York State regional regression equations for peak discharge estimation were used as presented in USGS WRI 84-4350 and then modified by an urban watershed correction as described in USGS Water Supply Paper 2007 (Sauer, 1983).

Beaver Swamp Brook: An updated log-Pearson Type III analysis was performed on the 46 years of record available at the USGS stream gage 01301000 on Beaver Swamp Brook at Mamaroneck to determine peak discharges at the gage for the 10%, 2%, 1% and 0.2% annual chance discharges. Drainage area transposition was then utilized to determine peak discharges for the selected recurrent intervals at the study reach limits and upstream of confluences with tributaries. The exponents used in the drainage area transposition calculation were obtained from WRI 90-4197 (Lumia, 1990).

Brentwood Brook: Peak discharges were developed using the USACE HEC-1 Flood Hydrograph computer program (USACE, 1991). Input model parameters such as sub-basin delineation and Time of Concentration calculation were developed using the GIS base map data provided by Westchester County GIS. A storage versus elevation curve was constructed from a preliminary HEC-RAS model to locate areas where significant storage may occur. A Clark hydrograph was used to derive the runoff hydrograph for each subbasin and was calibrated to match the 1% annual peak discharges calculated by the rational method.

Woodlands Road Tributary 1: Peak discharges for the selected recurrence intervals were developed using the Rational Method. The 0.2% annual chance flood discharge was extrapolated from a recurrence interval versus discharge log-probability relationship.

Woodlands Road Tributary 2: Peak discharges for the selected recurrence intervals were developed using the Rational Method. The 0.2% annual chance flood discharge was extrapolated from a recurrence interval versus discharge log-probability relationship.

02030102060-
Blind Brook: An updated log-Pearson Type III analysis was performed on the 46 years of record available at the USGS stream gage 01300000 on Blind Brook at Rye to determine peak discharges at the gage for the 10%, 2%, 1% and 0.2% annual chance discharges. Drainage area transposition was then utilized to determine peak discharges for the selected recurrent intervals at the study reach limits and upstream of confluences with tributaries. The exponents used in the drainage area transposition calculation were obtained from WRI 90-4197 (Lumia, 1990).

East Branch Blind Brook: Peak discharges for the selected recurrence intervals were developed using the Rational Method. The 0.2% annual chance flood discharge was extrapolated from a recurrence interval versus discharge log-probability relationship.

Hillside Avenue Brook: Peak discharges for the selected recurrence intervals were developed using the Rational Method. The 0.2% annual chance flood discharge was extrapolated from a recurrence interval versus discharge log-probability relationship.

02030101130-
Plum Brook: Peak discharges for the selected recurrence intervals were developed using regional regression equations for calculating flood frequency on rural, unregulated streams as presented in USGS Water Resources Investigations Report 84-4350 (Stedfast, 1986) and then modified by an urban correction as described in USGS Water Supply Paper 2007 (Sauer, 1983). The 0.2% annual chance flood discharge was extrapolated from a recurrence interval versus discharge log-probability relationship.

Plum Brook Tributary 1: Peak discharges were developed using the USACE HEC-1 Flood Hydrograph computer program (USACE, 1991). Input model parameters such as sub-basin delineation and Time of Concentration calculation were developed using the GIS base map data provided by Westchester County GIS. The NRCS curve number methodology was used to determine peak discharges for each sub-basin. Routing was performed at Lake Lincolndale. The discharges were then combined, lagged, and routed to determine downstream peak discharges.

Unnamed Tributary to Plum Brook: Peak discharges for the selected recurrence intervals were developed using regional regression equations for calculating flood frequency on rural, unregulated streams as presented in USGS Water Resources Investigations Report 84-4350 (Stedfast, 1986). The 0.2% annual chance flood discharge was extrapolated from a recurrence interval versus discharge log-probability relationship.

Brown Brook: Peak discharges for the 10%, 2% and 1% annual chance flood for all points of interest were calculated using regional regression equations for calculating flood frequency on rural, unregulated streams as presented in USGS Water Resources Investigations Report 84-4350 (Stedfast, 1986). The 0.2% annual peak discharge was calculated by extrapolation from a recurrence interval versus discharge log-probability relationship.

A routing analysis was performed at Somerstown Road. A series of discharges were utilized in the preliminary HEC-RAS model to determine a series of storage vs. discharge data which were then utilized in a HEC-1 mode to determine routing effects. The Clark hydrograph was used in HEC-1 to calculate peak discharges. The discharges were then combined, lagged, and routed to determine downstream peak discharges.

Croton River: Using the USGS Gage 0137500 on the Croton River at the New Croton Dam near Croton-on-Hudson, an updated log-Pearson Type III analysis was performed on the 72 years of record available. Peak discharges for the 10%, 2%, 1% and 0.2% annual chance flood were determined through an iterative process of removing low outliers, following the methodology presented in Bulletin 17B (U.S. Water Resources Council, 1981).

Branch Brook: The new hydrologic analysis was developed for the subwatershed above a point approximately 275 feet above East Main Street. New York State regional regression equations for peak discharge estimation were used as presented in USGS WRI 84-4350 and then modified by an urban watershed correction as described in USGS Water Supply Paper 2007 (Sauer, 1983).

02030101150-
Saw Mill River: Peak discharges were developed using the USACE HEC-1 Flood Hydrograph computer program (USACE, 1991). This methodology was chosen due to multiple locations along the river where, through HEC-RAS analysis, it was determined that significant in channel storage and routing occurs. Input model parameters such as sub-basin delineation and Time of Concentration calculation were developed using the GIS base map data provided by Westchester County GIS. A storage versus elevation curve was constructed from a preliminary HEC-RAS model to locate areas where significant storage may occur. A Clark hydrograph was used to derive the runoff hydrograph for each subbasin and was calibrated to match the 1% annual peak discharges calculated by the rational method. From the results of the HEC-1 analysis, drainage area transposition was performed to determine discharges at several points between the Saw Mill River Parkway (Point E, DA=5.14mi^2) and East Main Street (Point L, DA=16.63mi^2). All of these points were plotted on semi-logarithmic paper to produce a 'Drainage Area

versus Discharge' curve from which discharges at intermediate points can be obtained.

Pocantico River Lower Reach: New York State regional regression equations for peak discharge estimation were used as presented in USGS WRI 84-4350 and then modified by an urban watershed correction as described in USGS Water Supply Paper 2007 (Sauer, 1983).

Pocantico River Upper Reach: Peak discharges for the selected recurrence intervals were developed using New York State regional regression equations for peak discharge estimation as presented in USGS WRI 84-4350 and then modified by an urban watershed correction as described in USGS Water Supply Paper 2007 (Sauer, 1983).

Kil Brook: Peak discharges for the selected recurrence interval were developed using New York State regional regression equations for peak discharge estimation as presented in USGS WRI 84-4350 and then modified by an urban watershed correction as described in USGS Water Supply Paper 2007 (Sauer, 1983).

Sing Sing Creek: Peak discharges for the selected recurrence interval were developed using New York State regional regression equations for peak discharge estimation as presented in USGS WRI 84-4350 and then modified by an urban watershed correction as described in USGS Water Supply Paper 2007 (Sauer, 1983).

Barney Brook: After evaluating an area along the brook for storage and peak discharge attenuation with a HEC-1 analysis, peak discharges for the selected recurrence intervals were developed using the Rational Method. The 0.2% annual chance flood discharge was extrapolated from a recurrence interval versus discharge log-probability relationship.

Barney Brook Tributary: Peak discharges for the selected recurrence intervals were developed using the Rational Method. The 0.2% annual chance flood discharge was extrapolated from a recurrence interval versus discharge log-probability relationship.

Sunnyside Brook: Peak discharges for the selected recurrence intervals were developed using the Rational Method. The 0.2% annual chance flood discharge was extrapolated from a recurrence interval versus discharge log-probability relationship.

Caney Brook: Peak discharges for the selected recurrence interval were developed using New York State regional regression equations for peak discharge estimation as presented in USGS WRI 84-4350 and then modified by an urban watershed correction as described in USGS Water Supply Paper 2007 (Sauer, 1983).

Kensico Road Tributary: Peak discharges for the selected recurrence intervals were developed using the Rational Method. The 0.2% annual chance flood discharge was extrapolated from a recurrence interval versus discharge log-probability relationship.

Tibbetts Brook: Peak discharges for the selected recurrence interval were developed using New York State regional regression equations for peak discharge estimation as presented in USGS WRI 84-4350 and then modified by an urban watershed correction as described in USGS Water Supply Paper 2007 (Sauer, 1983).

Wickers Creek: Peak discharges for the selected recurrence intervals were developed using New Jersey Special Report 38, The Magnitude and Frequency of Floods in New Jersey with Effects of Urbanization (Stankowski, 1974). Input parameters were calculated from the GIS data provided by Westchester County GIS.

Fly Kill Brook: Peak discharges for the selected recurrence intervals were developed using the Rational Method. The 0.2% annual chance flood discharge was extrapolated from a recurrence interval versus discharge log-probability relationship.

Nanny Hagen Brook: Peak discharges for the selected recurrence interval were developed using New York State regional regression equations for peak discharge estimation as presented in USGS WRI 84-4350 and then modified by an urban watershed correction as described in USGS Water Supply Paper 2007 (Sauer, 1983).

Leroy Avenue Brook: Peak discharges for the selected recurrence intervals were developed using the Rational Method. The 0.2% annual chance flood discharge was extrapolated from a recurrence interval versus discharge log-probability relationship.

01100006350-
Mianus River: Peak discharges for the selected recurrence intervals were developed using regional regression equations for calculating flood frequency on rural, unregulated streams as presented in USGS Water Resources Investigations Report 84-4350 (Stedfast, 1986).

01100006430-
Byram River Reach 1: Peak discharges for the selected recurrence intervals were developed using USGS Water Resources Investigations Report 84-4350 (Stedfast, 1986) and then modified by an urban watershed correction as described in USGS Water Supply Paper 2007 (Sauer, 1983).

For streams studied by Limited Detail methods different methodologies were used to calculate the 1% annual chance discharge.

Dickey Brook: The drainage area only equation as presented in WRI 90-4197 were used to develop the 1% annual chance peak discharge (Lumia, 1990).

Hunter Brook: The drainage area only equation as presented in WRI 90-4197 were used to develop the 1% annual chance peak discharge (Lumia, 1990).

Sparta Brook: The NRCS TR-55 computer program was used for the hydrologic analysis of the 1% annual chance discharge.

Waccabuc River: The NRCS TR-55 computer program was used for the hydrologic analysis of the 1% annual chance discharge.

Pocantico River: The NRCS TR-55 computer program was used for the hydrologic analysis of the 1% annual chance discharge.

For streams studied by approximate methods, the drainage area only equation as presented in WRI 90-4197 were used to develop the 1% annual chance peak discharge (Lumia, 1990).

A summary of the drainage area-peak discharge relationships for all the streams studied by detailed methods is shown in Table 4, "Summary of Discharges."

TABLE 4 – SUMMARY OF DISCHARGES

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs)			
		10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
ANNSVILLE CREEK					
At confluence with the Hudson River	68.9	1,891	3,141	3,768	5,635
BARNEY BROOK					
Mouth at confluence with Hudson	1.2	516	856	988	1,040
Upstream of confluence with unnamed tributary	0.8	430	585	676	840
Inflow to reservoir outlet	0.3	206	279	330	415
BARNEY BROOK TRIBUTARY					
Upstream of confluence with Barney	0.3	221	287	331	400
BEAR GUTTER CREEK					
At mouth	0.95	124	339	460	*
BEAVER SWAMP BROOK					
Upstream of South Barry Avenue	4.9	210	332	387	530
At USGS gage	4.4	207	328	382	520
Upstream of confluence with Brentwood Brook	2.8	296	559	685	920
Downstream of Bradford Avenue	2.7	206	396	493	700
Upstream of Bradford Avenue	2.7	267	540	660	1050
Downstream Metro North Railroad	2.34	251	512	628	1610

*Data not available

TABLE 4 - SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
BEAVER SWAMP BROOK (continued)					
Upstream Metro North Railroad	2.34	454	816	968	1400
Upstream of Locust Avenue	1.6	414	751	892	1300
Upstream of Park Drive	0.9	344	631	752	1145
BLIND BROOK					
At mouth	10.9	1,660	2,731	3,265	4,426
At USGS Gage	9.6	1,521	2,497	2,984	4,042
At Purchase Street	8.80	1,434	2,353	2,812	3,807
At upstream corporate limit	8.32	1,374	2,255	2,694	3,645
Upstream of confluence with East Branch Blind Brook	7.80	1,317	2,160	2,580	3,490
At Bowman Avenue	6.90	1,211	1,986	2,372	3,206
At Cross Section O	6.00	1,100	1,803	2,153	2,907
At a point approximately 400 feet upstream of Brookside Avenue	3.0	780	1,220	1,535	2,375
Upstream of New Blind Brook Country Club Dam	2.4	575	930	1,135	1,765
At cross section AM (upstream of Anderson Hill Road)	1.80	425	695	850	1,330
BRANCH BROOK					
Confluence with Kisco River	2.83	255	422	494	713
Upstream of East Main Street	2.20	252	363	422	548
Upstream of Tributary approximately 1,100 feet upstream of Preston Way	1.10	183	302	369	524
Upstream of Green Lane	0.40	98	168	209	321
BRANCH 1 HUTCHINSON RIVER					
Highbrook Avenue	0.25	172	219	239	291
BRANCH 2 KISCO RIVER					
At downstream Town of New Castle corporate Limits	0.18	147	195	214	259

TABLE 4 - SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs)			
		10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
BRENTWOOD BROOK					
Upstream of confluence with Beaver Swamp Brook	1.57	108	197	248	382
Downstream of Metro North Railroad crossing	1.34	96	177	224	352
Upstream of Metro North Railroad crossing	1.34	338	626	748	1,150
Downstream of confluence with Nelson Creek	1.14	291	538	643	1,020
Upstream of confluence with Nelson Creek	0.90	225	417	499	750
Upstream of confluence with Woodlands Road Tributary 1	0.4	179	247	289	378
BRONX RIVER					
Upstream of corporate limits with New York City	47.8	1,952	2,441	3,232	4,253
Downstream of Mount Vernon corporate limits with New York City	46.9	1,926	2,409	3,191	4,198
Upstream of Cross County Parkway Bridge	44.9	1,869	2,337	3,095	4,072
At USGS Gage	42.8	1,809	2,262	2,996	3,942
Upstream of confluence with Grassy Sprain Brook	34.3	1,554	1,944	2,574	3,387
Downstream of Tuckahoe corporate limits	34	1,545	1,932	2,559	3,367
Upstream of confluence with Troublesome Brook	30.9	1,447	1,809	2,396	3,153
Downstream of Scarsdale corporate limits	29.2	1,390	1,738	2,302	3,029
Upstream of confluence with South Fox Meadow Brook	26.9	1,316	1,645	2,179	2,867
Downstream of White Plain corporate limits (600 feet downstream of railroad bridge)	24.6	1,238	1,548	2,051	2,698
Approximately 1,000 feet upstream of County Center Parking Lot	22.2	1,153	1,442	1,910	2,513

TABLE 4 - SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs)			
		10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
BROWN BROOK					
Upstream of Muscoot Reservoir	3.58	464	736	888	1,469
Upstream of Somertown Road	3.07	410	657	796	1,314
Upstream of Mill Street/Old Somers Road	2.16	330	525	632	1,016
Upstream of Unnamed Tributary near Hachaliah Brown Drive and Warren Street	1.69	263	419	504	849
Upstream of Green Brier Drive	1.18	182	298	362	652
Upstream of Warren Street (first crossing)	1.01	162	259	312	581
BYRAM RIVER REACH 1					
At mouth	30.4	2,719	4,442	5,439	7,259
Upstream Metro North Railroad bridge	29.0	2,567	4,222	5,180	6,796
BYRAM RIVER REACH 2					
At county boundary	8.39	1,171	2,164	2,576	*
Upstream of confluence of Wampus River	4.59	436	796	996	*
Upstream of State Route 22	4.10	400	745	927	*
Approximately 900 feet downstream of Tributary 1 to Byram River	3.73	376	708	886	*
Upstream of confluence of Tributary 1 to Byram River	2.87	281	521	656	*
Upstream of Byram Lake Road	0.28	114	224	289	*
CANEY BROOK					
Upstream of confluence with Pocantico River	1.4	328	482	552	706
Upstream of Leroy Road	1.0	234	342	390	494
CLOVE BROOK					
At downstream limit of Study	1.3	460	760	945	1,450

*Data not available

TABLE 4 - SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
CROOK BROOK					
At confluence with Titicus River	4.00	475	800	935	1,370
Confluence of Tributary west of Routes 121 and 124	2.36	325	540	635	920
CROTON RIVER					
At USGS Gage	378	10,963	23,499	31,264	58,545
DAVID'S BROOK					
At confluence with Stone Mill River	3.2	220	395	505	850
At Guard Hill Road	1.3	85	155	200	340
EAST BRANCH BLIND BROOK					
Upstream of confluence with Blind Brook	1.20	433	631	717	940
Upstream of dam	0.90	409	558	648	825
Upstream of Access Road	0.81	378	519	598	755
Upstream of Betsy Brown Road	0.66	369	495	576	720
Upstream of confluence with West Branch Blind Brook	0.20	123	165	192	243
EAST BRANCH MAMARONECK RIVER					
At downstream corporate limits	2.76	749	1,042	1,152	1,444
At Oakmont Drive	2.44	650	900	1,000	1,300
Approximately 2,250 feet downstream of Barnes Lane	2.18	571	794	878	1,100
Immediately upstream of confluence with unnamed tributary at approximately 935 feet downstream of Barnes Lane	1.61	230	360	410	700
Immediately upstream of confluence with unnamed tributary approximately 100 feet upstream of Barnes Lane	0.95	160	225	285	400

TABLE 4 - SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
EAST BRANCH MAMARONECK RIVER (continued)					
Outflow from Forest Lake	0.85	135	216	256	366
Inflow from Forest Lake	0.85	315	437	482	603
EAST BRANCH SHELDRAKE RIVER					
Immediately upstream of confluence with Sheldrake River	1.9	485	681	776	972
FLY KILL BROOK					
At mouth	0.72	315	510	630	970
Confluence with Saw Mill	0.7	352	495	571	730
FURNACE BROOK					
At Cortlandt Street	7.7	578	936	1,123	1,600
At dam, approximately 150 feet upstream of North Riverside Avenue	7.4	528	845	1,008	1,450
At Furnace Lake Outlet	6.0	392	626	748	1,080
At Furnace Dock Road	5.4	347	563	677	940
Immediately upstream of confluence with Dickerson Road Tributary, approximately 850 feet downstream of Watch Hill Road	3.8	260	422	508	710
GEDNEY BROOK					
Downstream of Town of New Castle corporate limits	2.00	254	431	534	800
At Millwood Road	1.21	178	306	382	570
At Turner Drive	1.04	162	280	355	522
GRASSY SPRAIN BROOK					
Immediately upstream of confluence with Bronx River	8.7	919	1,320	1,544	1,955
Upstream of confluence of Tributary with Longvale Road	7.6	747	1,074	1,256	1,579

TABLE 4 - SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
HALLOCKS MILL BROOK					
At Yorktown corporate limits	9.50	700	1,191	1,399	2,067
At confluence of Hallocks Mill Brook Tributary 1	7.97	608	1,031	1,210	1,782
At confluence of Hallocks Mill Brook Tributary 2	4.01	301	508	593	861
HALLOCKS MILL BROOK TRIBUTARY 1					
At confluence with Hallocks Mill Brook	1.03	141	231	269	383
HALLOCKS MILL BROOK TRIBUTARY 2					
At confluence with Hallocks Mill Brook	3.21	330	553	646	938
HIGHLAND AVENUE BROOK					
Confluence with Reservoir #3	0.45	276	380	437	560
Approximately 1,300 feet upstream of confluence with Reservoir #3	0.36	265	356	414	515
HILLSIDE AVENUE BROOK					
Upstream of confluence with East Branch Blind Brook	0.30	188	256	293	350
HUTCHINSON RIVER					
At corporate limits with New York City	9.52	1,662	2,461	2,754	3,525
Approximately 1,006 feet downstream of East Sanford Boulevard	7.67	829	1,260	1,422	1,985
At USGS Gage 01301500	6.22	431	649	758	1,054
Downstream of Reservoir No. 2 (Routed)	3.06	262	503	642	1,240
Upstream of Reservoir No. 2 (Unrouted)	3.06	663	1,075	1,227	1,420
Downstream of Reservoir No. 3	2.74	585	948	1,084	1,243

TABLE 4 - SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
HUTCHINSON RIVER (continued)					
Upstream limit of Reservoir No. 3	2.16	561	880	998	1,310
Downstream of Reservoir No. 1	1.86	181	378	464	708
Upstream limit of Reservoir No. 1	1.18	728	1,137	1,290	1,695
Upstream of Hutchinson Boulevard	0.68	486	745	840	1,090
KENSICO ROAD TRIBUTARY					
At confluence with Nanny Hagen Brook	0.8	430	580	670	850
KIL BROOK					
Upstream of confluence with Sing Sing Creek	2.63	381	605	725	945
Upstream of confluence with Tributary near Narragansett Avenue	1.3	163	254	300	419
KISCO RIVER					
At confluence with New Croton Reservoir	18.18	1,214	1,952	2,369	3,300
At railroad	8.79	761	1,297	1,524	2,256
KISCO RIVER TRIBUTARY 1					
Confluence with Kisco River	2.48	337	564	659	958
KNOLLWOOD BROOK					
At Knollwood Road	1.1	342	555	679	1,000
LECOUNT CREEK					
At confluence with the Mamaroneck River Lower Reach	0.36	*	*	270	*
LEROY AVENUE BROOK					
Upstream of Broadway Culvert	0.2	138	184	215	270

*Data not available

TABLE 4 - SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
MAMARONECK RIVER LOWER REACH					
At mouth	24.00	2,870	4,210	4,800	6,070
At USGS gage	23.40	2,820	4,140	4,710	5,960
Upstream of confluence with Sheldrake River	17.10	2,280	3,330	3,800	4,790
MAMARONECK RIVER UPPER REACH					
At Westchester Avenue	1.8	655	852	927	1,130
At I-287 Ramp, approximately 1,700 feet upstream of Westchester Avenue	1.3	353	492	549	716
At outflow of Silver Lake	1.0	273	391	438	563
MANHATTAN PARK BROOK					
Confluence with Bronx River	*	610	980	1,200	1,760
MIANUS RIVER					
downstream of Millers Mill Road	12.2	606	938	1,106	1,520
Upstream of Greenwich Road	9.8	511	810	964	1,320
Upstream of dam	6.8	374	609	733	1,010
MILL RIVER					
At Town of Pond Ridge corporate limits	10.5	*	*	1,484	*
MOHEGAN OUTLET					
Upstream of corporate limit with Putnam Valley	1.67	384	633	729	989
Upstream of Strawberry Road	1.44	268	434	498	670
MUSCOOT RIVER					
At confluence with Amawalk Reservoir	14.67	1,083	1,861	2,191	3,269
NANNY HAGEN BROOK					
Confluence with Saw Mill	3.1	782	1,127	1,310	1,669
Upstream of confluence with Kensico Road Tributary	2.3	599	866	1,003	1,288

*Data not available

TABLE 4 - SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
NELSON CREEK					
Upstream of confluence with Brentwood Brook	0.24	113	154	179	209
Approximately 300 feet downstream of Union Avenue	0.07	46	60	69	84
PEEKSKILL HOLLOW BROOK					
At Albany Post Road	48.1	1,404	2,378	2,873	4,363
PEEKSKILL HOLLOW BROOK TRIBUTARY					
Upstream of confluence with Peekskill Hollow Brook	3.08	660	900	1,000	1,230
Downstream of Marilyn Road	2.56	470	620	680	880
Downstream of East Main Street	2.00	330	440	490	725
PITCH SWAMP BROOK					
Pound Ridge Road	1.2	85	150	195	325
PLUM BROOK					
Confluence with Muscoot Reservoir	7.40	1,099	1,737	2,076	2,732
Upstream of Pond	6.80	1,053	1,666	1,990	2,588
Upstream of Brick Hill Road	6.20	966	1,543	1,849	2,396
Upstream of Krystal Road	5.88	918	1,407	1,682	2,258
Upstream of confluence with Unnamed Tributary to Plum Brook	4.00	616	976	1,163	1,535
Upstream of confluence with Plum Brook Tributary 1	2.60	468	709	829	1,069
Upstream of boundary between Westchester and Putnam County	1.71	335	521	624	950
PLUM BROOK TRIBUTARY 1					
Upstream of confluence with Plum Brook	0.67	91	164	200	360

TABLE 4 - SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
POCANTICO RIVER LOWER REACH					
Upstream of confluence with Hudson	15.7	1,169	2,561	3,041	3,933
At North Broadway	15.4	1,585	2,389	2,817	3,628
Upstream of confluence with Gory Brook	14.2	1,391	2,112	2,497	3,241
POCANTICO RIVER UPPER REACH					
Upstream of Long Hill Road	8.4	1,075	1,631	1,925	2,477
Upstream of Tributary #1	5.0	755	1,184	1,411	1,845
Upstream of Pleasantville Road	4.8	634	977	1,157	1,509
SAW MILL CREEK					
At confluence with New Croton Reservoir	1.40	195	322	376	539
SAW MILL RIVER					
Upstream of confluence with Hudson River	26.0	890	1,558	1,910	2,890
At USGS gage	25.5	888	1,550	1,905	2,880
Upstream of Torre Place	24.4	885	1,535	1,895	2,850
Upstream of unnamed tributary near Danforth Avenue	20.8	907	1,587	1,980	2,932
Upstream of Ashford Avenue	20.4	899	1,586	1,967	2,916
Upstream of Woodlands Lake Outlet	19.7	1,018	1,965	2,344	3,521
Upstream of CONRAIL bridge	18.1	1,208	2,204	2,638	3,837
Upstream of confluence with Rum Brook	17.0	1,180	2,150	2,575	3,750
Upstream of East Main Street	16.6	1,242	2,266	2,698	3,954
Upstream of confluence with Mine Brook	14.6	1,136	2,072	2,467	3,616
Upstream of confluence with Tarrytown Reservoir Outlet	12.4	1,015	1,853	2,206	3,266
Upstream of confluence with Tributary near Stevens Avenue	10.9	930	1,696	2,019	2,959
Upstream of confluence with Tributary near Route 100	9.8	864	1,577	1,877	2,751

TABLE 4 - SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
SAW MILL RIVER (continued)					
Downstream of confluence with Nanny Hagen Brook	8.3	771	1,407	1,675	2,455
Upstream of confluence with Nanny Hagen Brook	5.2	349	660	782	1,114
Upstream of Saw Mill River Parkway	5.1	440	809	957	1,355
Upstream of Catskill Aqueduct Crossing	3.7	355	660	780	1,110
Upstream of CONRAIL bridge	3.3	394	736	884	1,319
Upstream of confluence with tributary near Washington Avenue	2.0	195	350	435	660
Upstream of Quaker Street (Route 120)	1.2	393	701	828	1,185
SHELDRAKE RIVER					
Upstream of confluence with Mamaroneck River	6.5	1,112	1,564	1,806	2,256
Upstream of confluence with East Branch Sheldrake River	3.2	515	724	830	1,042
Upstream of Weaver Street	2.9	440	614	700	862
Downstream of Hutchinson River Parkway	1.9	360	495	557	669
At cross section A (just downstream of Palmer Avenue, at corporate limits with New Rochelle	1.2	242	323	361	434
At cross section I (upstream of Brookby Road)	0.9	182	247	276	325
SHRUB OAK BROOK					
At Town of Yorktown downstream corporate limits	9.54	833	1,423	1,673	2,483
Northeast of U.S. Route 6 and Mill Street	8.05	648	110	1,292	1,905
Upstream of Barger Brook	3.73	320	500	600	850
At Lee Boulevard	2.55	220	360	420	600
SHRUB OAK BROOK TRIBUTARY 1					
At confluence with Shrub Oak Brook	0.9	166	203	230	280

TABLE 4 - SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs)			
		10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
SING SING CREEK					
Upstream of Metro North railroad crossing	4.9	898	1,193	1,667	2,215
Upstream of North Highland Avenue	4.44	799	1,242	1,487	1,983
SOUTH FOX MEADOW BROOK					
Upstream of confluence with Bronx River	1.35	356	637	750	1,065
Downstream of Ogden Road	1.22	329	594	701	992
Downstream of Harcourt Road	1.18	323	586	692	979
Downstream of Olmstead Road	0.96	264	482	569	801
Downstream of Tompkins Road	0.59	120	226	267	371
Approximately 450 feet downstream of Mamaroneck Road	0.4	89	174	208	290
SPRAIN BROOK					
At Village of Ardsley corporate limits	2.05	475	775	950	1,550
STONE HILL RIVER					
Dam Road	13.7	1,110	1,980	2,540	4,300
Confluence of David's Brook	9.1	735	1,310	1,680	2,850
Millertown Road	3.7	180	320	410	695
SUNNYSIDE BROOK					
At confluence with Hudson	0.7	330	470	550	700
Upstream of confluence with unnamed tributary	0.4	240	310	370	475
TIBBETTS BROOK					
Upstream of corporate limits with New York City	2.3	550	766	882	1,117
Approximately 1,800 feet upstream of corporate limit with New York City	2.2	543	762	879	1,103

TABLE 4 - SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
TITICUS RIVER					
Confluence with Titicus Reservoir	16.68	1,300	2,250	2,650	3,970
At Route 124	12.14	965	1,790	2,220	3,150
At Norton Road	9.44	800	1,550	2,005	2,890
TRIBUTARY TO LAUREL RESERVOIR					
At Town of Pound Ridge corporate limits	0.9	*	*	205	*
TRIBUTARY TO MILL RIVER					
Upstream of confluence with Mill River	1.6	*	*	272	*
TRIBUTARY 1 TO WAMPUS RIVER					
At mouth	0.70	162	319	390	*
TRIBUTARY 2 TO WAMPUS RIVER					
At mouth	0.76	166	321	387	*
Approximately 5,073 feet upstream of confluence with the Wampus River	0.33	118	235	316	*
TRIBUTARY 3 TO WAMPUS RIVER					
At mouth	0.33	81	145	194	*
TROUBLESOME BROOK					
Upstream of confluence with Bronx River	2.8	1,032	1,343	1,527	1,817
At culvert located approximately 700 feet upstream of Maria Lane, downstream of diversion	*	582	873	1,037	1,291

*Data not available

TABLE 4 - SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
UNNAMED TRIBUTARY TO PLUM BROOK					
Upstream of confluence with Plum Brook	1.6	226	366	439	600
WAMPUS RIVER					
At mouth	3.64	692	1,285	1,459	*
Upstream of confluence of Tributary 1 to the Wampus River	2.62	441	804	1,012	*
Upstream of confluence of Tributary 2 to the Wampus River	1.26	370	690	869	*
Upstream of confluence of Tributary 3 to the Wampus River	0.80	104	199	264	*
WEST BRANCH BLIND BROOK					
At confluence with Blind Brook	2.96	*	*	405	*
At confluence of unnamed tributary	2.51	*	*	360	*
At confluence of unnamed tributary	2.03	*	*	305	*
WICKERS CREEK					
Confluence with Hudson	1.2	380	620	760	1,120
Upstream of Broadway culvert	0.7	172	294	369	579
WOODLANDS ROAD BROOK 1					
Immediately upstream of confluence with Brentwood Brook	0.37	157	214	248	315
Immediately upstream of confluence with Woodlands Road Tributary 2	0.22	117	158	185	216
Approximately 220 feet downstream of Woodlands Road		77	118	145	176

*Data not available

TABLE 4 - SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs)			
		10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
WOODLANDS ROAD BROOK 2					
Immediately upstream of confluence with Woodlands Road Tributary1	0.12	67	89	104	132

For the New Croton Reservoir, daily reservoir stage elevations from 1937 to 2004 were obtained for selected reservoirs in Westchester County, NY from the New York City Department of Environmental Protection. This data was screened for data entry errors. Years for which the peak stage is less than or equal to the spillway elevation were excluded from further analysis. Plotting positions were calculated using the Weibull distribution (according to Bulletin 17-B FAQ). Plots were made on probability paper.

Due to the shape of the distribution, straight-line fitting using either least squares or a best fit methodology was rejected in accordance with Bulletin 17-B FAQs. The floods in October of 1955 are the peak event in each reservoir studied and substantially above straight-line fits. Instead, a visually fitted curve was used in accordance with Bulletin 17-B FAQs.

For the Hudson River, elevation-frequency profiles were used to determine flood elevations for the selected recurrence intervals. Using elevation-frequency curves for Albany, Catskill, and Spuyten Duyvil, New York, provided by the USACE, New York District, maximum and minimum possible slopes of the profiles between Spuyten Duyvil and Catskill for each recurrence interval were established. Then an estimate of the position of the final profile between these envelope profiles was made. An attempt was made to take into account both the magnitude of the recurrence interval and the variations in the mean high tide.

The stillwater elevations have been determined for the 10-, 2-, 1-, and 0.2-percent annual chance floods for the flooding sources studied by detailed methods and are summarized in Table 5, "Summary of Stillwater Elevations."

TABLE 5 - SUMMARY OF STILLWATER ELEVATIONS

FLOODING SOURCE AND LOCATION	ELEVATION (feet NAVD*) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
HUDSON RIVER				
At Village of Croton-on-Hudson	5.0	6.0	6.6	8.0
At Town of Peeskill	5.0	6.0	6.6	8.0
At Town of Ossining	5.3	6.3	6.8	8.0
At City of Yonkers	5.2	6.2	6.7	8.0
LONG ISLAND SOUND				
At Port Chester	8.3	10.5	11.8	15.0
At City of Rye	8.7	11.3	12.5	16.8
At Town of Mamaroneck	8.8	10.7	11.6	13.9
At City of New Rochelle	8.5	11.1	12.8	16.1
At Village of Pelham Manor	8.5	11.1	12.8	16.1
At Hutchinson River	8.6	11.7	13.4	14.8
NEW CROTON RESERVOIR	201.8	205.1	205.4	206.2

3.2 Riverine Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the source studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals. Users should be aware that flood elevations shown on the FIRM represent rounded whole-foot elevations and may not exactly reflect the elevations shown on the Flood Profiles or in the Floodway Data tables in the FIS report. For construction and/or floodplain management purposes, users are encouraged to use the flood elevation data presented in this FIS in conjunction with the data shown on the FIRM.

For each incorporated community within Westchester County that had a previously printed FIS report, the hydraulic analyses described in those reports have been compiled and are summarized below.

Precountywide Analyses

These analysis were carried out by applying the step-backwater computations employed by the HEC-2 computer program (based on Bernoulli's energy equation and Manning's formula) to cross section data and other hydraulic characteristics of the waterways of Annsville Creek, Bear Gutter Creek, Branch 1 Hutchinson River, Branch 2 Kisco River, Crook Brook, David's Brook, Fulton Brook, Gedney Brook, Hallocks Mill Brook, Hallocks Mill Brook Tributary 1, Hallocks Mill Brook Tributary 2, Kisco River, Kisco River Tributary 1, Knollwood Brook, Lecount Creek, Manhattan Park Brook, Mill River, Muscoot River, Peekskill Hollow Brook, Pitch Swamp Brook, Shrub Oak Brook, Shrub Oak Brook

Tributary 1, Sprain Brook, Stone Hill River, Titicus River, Tributary to Laurel Reservoir, Tributary to Mill River, Tributary 1 to Wampus River, Tributary 2 to Wampus River, Tributary 3 to Wampus River, Wampus River, West Branch of Blind Brook (USACE, December 1959; Chow, 1959).

Countywide Analyses

Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles (Exhibit 1). For stream segments for which a floodway was computed (Section 4.2), selected cross section locations are also shown on the FIRM (Exhibit 2).

For ease of use, information on the methodology used to study different streams is organized based on 11-digit HUC. See Section 3.1 for more explanation on the HUC system.

In Westchester County, detailed revised analyses were performed in some portion of the following HUC 11 units:

02030102020-Bronx River
02030102030-Bronx River to Mamaroneck
02030102040-Mamaroneck River
02030102060-Blind Brook
02030101130-Lower Croton River
02030101150-Croton River to Harlem River
01100006350-Mianus River
01100006430-Lower Byram River

For all revised detailed streams, field survey was obtained for both natural stream cross sections as well as hydraulic obstructions such as bridges, culverts, dams and weirs. This information was combined with topographic data provided by the Westchester County GIS in the form of bare earth mass points and breaklines to create a bare earth surface for the stream corridor. This information was preprocessed using the HEC GeoRAS interface for ArcGIS 9.0. The interface prepared the geometry file for HEC-RAS and was eventually used to visualize results from the simulations.

Water-surface elevations of flood profiles of the selected recurrence intervals for all revised detailed streams were computed using the USACE HEC-RAS computer program, Version 3.1.3 (USACE, 2005).

02030102020-
Starting water surface elevations for the Bronx River, Peekskill Hollow Brook Tributary, South Fox Meadow Brook, Mohegan Outlet, Troublesome Brook Reach 1, Clove Brook, and Grassy Sprain Brook were obtained using normal depth. Furnace Brook starting water surface elevations for all profiles were derived from mean high water elevation from the Hudson River.

02030102030-
Starting water surface elevations for the Hutchinson River and Nelson Creek were obtained using normal depth. A known water surface elevation was used for the starting conditions of Highland Avenue Brook.

02030102040-
Starting water surface elevations for the Mamaroneck River Upper Reach, the East Branch Mamaroneck River, the Sheldrake River, Brentwood Brook and Woodlands Road Tributary 2 were obtained using normal depth. For the Mamaroneck River Lower Reach and Beaver Swamp Brook mean higher high water on the Long Island Sound was used as the starting water surface elevation, as determined from tidal gage analysis.

For the East Branch Sheldrake, similarity drainage basin size and Time of Concentration values led to assumption of coincident peaks with the Sheldrake River. Therefore, elevations from the Sheldrake River at the confluence were used as the starting water surface elevations for the East Branch Sheldrake River. Likewise, the starting water surface elevations for Woodlands Road Tributary 1 were obtained from the water surface elevations of Brentwood Brook at the confluence.

02030102060-
The starting water surface elevations for East Branch Blind Brook and Hillside Avenue Brook were both obtained from normal depth calculations. For Blind Brook the mean higher high water elevation on the Long Island Sound was used as the starting water surface elevation, as determined from tidal gage analysis.

02030101130-
For Plum Brook and Brown Brook, starting water surface elevations were obtained from the masonry crest spillway elevation for the Muscoot Reservoir. For Plum Brook Tributary, Unnamed Tributary to Plum Brook, and the Croton River, normal depth was used as a starting water surface elevation. For Branch Brook, elevations from the effective HEC-2 analysis were used at the downstream limit of the revision.

02030101150-
For all streams in this HUC, the Saw Mill River, the Pocantico River Lower Reach, the Pocantico River Upper Reach, Kil Brook, Sing Sing Creek, Barney Brook, Barney Brook Tributary, Caney Brook, Sunnyside Brook, Kensico Road Tributary, Tibbetts Brook, Wickers Creek, Fly Kill Brook, Nanny Hagen Brook, and Leroy Avenue Brook, normal depth calculation was used to obtain starting water surface elevations for all profiles.

01100006350-
Normal depth was used to obtain the starting water surface elevation for the Mianus River.

01100006430-
For Byram River Reach 1 the mean higher high water elevation on the Long Island Sound was used as the starting water surface elevation, as determined from tidal gage analysis.

The flood elevations shown on the profiles are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

Flood profiles were drawn showing computed water-surface elevations for floods of the selected recurrence intervals.

For Zone A analyses, floodplains were developed using the USACE Geo-RAS and HEC-RAS programs. The backwater effects associated with bridges and other structures located within the floodplain were not incorporated into the Zone A areas developed for streams.

For Limited Detail Analyses, floodplains were estimated using the USACE Geo-RAS and HEC-RAS computer programs. In addition, attempts were made to model the hydraulic impact of structures such as culverts and bridges based on field visits and engineering judgment.

Roughness factors (Manning's "n") used in the hydraulic computations were chosen by engineering judgment and were based on field observations of the streams and floodplain areas. Roughness factors for all streams studied by detailed methods are shown in Table 6, "Manning's "n" Values."

TABLE 6 – MANNING'S "n" VALUES

Stream	Channel "n"	Overbank "n"
Annsville Creek	0.030	0.060 – 0.065
Barney Brook	0.050 – 0.070	0.030 – 0.050
Barney Brook Tributary	0.050 – 0.070	0.030 – 0.045
Bear Butter Creek	0.030 – 0.060	0.040 – 0.090
Beaver Swamp	0.025 – 0.060	0.030 – 0.050
Blind Brook	0.020 – 0.090	0.020 – 0.090
Blind Brook	0.020 – 0.080	0.025 – 0.090
Branch 1 Hutchinson River	0.040	0.080 – 0.100
Branch 2 Kisco River	0.030	0.080
Brentwood Brook	0.035	0.060 – 0.120
Bronx River	0.030 – 0.065	0.040 – 0.080
Brown Brook	0.022 – 0.049	0.080 – 0.150
Byram River Reach 1	0.035 – 0.040	0.030 – 0.100
Byram River Reach 2	0.015 – 0.070	0.015 – 0.090
Caney Brook	0.030 – 0.045	0.050 – 0.090
Clove Brook	0.030 – 0.045	0.050 – 0.100
Crook Brook	0.040 – 0.060	0.070 – 0.090
Croton River	0.020 – 0.030	0.060

TABLE 6 – MANNING'S "n" VALUES - continued

Stream	Channel "n"	Overbank "n"
Davids Brook	0.050	0.100
East Branch Blind Brook	0.020 – 0.090	0.020 – 0.090
East Branch Mamaroneck River	0.030 – 0.120	0.016 – 0.120
East Branch Sheldrake River	0.030	0.100
Fly Kill	0.030 – 0.045	0.050 – 0.100
Fulton Brook	0.040 – 0.055	0.050 – 0.080
Furnace Brook	0.035 – 0.050	0.016 – 0.100
Gedney Brook	0.030	0.080
Grassy Sprain Brook	0.014 – 0.060	0.016 – 0.100
Hallocks Mill Brook	0.040 – 0.050	0.060 – 0.085
Hallocks Mill Brook Tributary 1	0.040 – 0.045	0.050 – 0.080
Hallocks Mill Brook Tributary 2	0.045	01.050 – 0.080
Highland Avenue Brook	0.030 – 0.100	0.016 – 0.100
Hillside Avenue Brook	0.035 – 0.060	0.016 – 0.060
Hutchinson River	0.015 – 0.060	0.025 – 0.080
Kensico Road Tributary	0.030 – 0.045	0.050 – 0.100
Kill Brook	0.020 – 0.040	0.060 – 0.070
Kisco River	0.030 – 0.045	0.080 – 0.100
Kisco River Tributary 1	0.040 – 0.045	0.090 – 0.100
Knollwood Brook	0.030 – 0.040	0.060 – 0.100
Lecourt Creek	0.035	0.060 – 0.120
Leroy Avenue Brook	0.040 – 0.060	0.013 – 0.120
Mamaroneck River Lower Reach	0.035 – 0.100	0.016 – 0.100
Mamaroneck River Upper Reach	0.030 – 0.050	0.040 – 0.070
Manhattan Park Brook	0.030 – 0.045	0.050 – 0.100
Mianus River	0.030 – 0.120	0.030 – 0.120
Mill River	0.015 – 0.080	0.100
Mohegan Outlet	0.016 – 0.120	0.016 – 0.120
Muscoot River	0.020 – 0.045	0.085 – 0.100
Nanny Hagen Brook	0.030 – 0.045	0.050 – 0.100
Nelson Creek	0.016 – 0.100	0.030 – 0.100
Peekskill Hollow Brook	0.030 – 0.035	0.060 – 0.065
Peekskill Hollow Brook Tributary	0.030 – 0.120	0.016 – 0.120
Pitch Swamp Brook	0.050	0.100
Plum Brook	0.004 – 0.047	0.085 – 0.100
Plum Brook Tributary 1	0.025 – 0.040	0.080 – 0.150
Pocantico River Lower Reach	0.040 – 0.170	0.040 – 0.120
Pocantico River Upper Reach	0.040 – 0.100	0.045 – 0.120
Saw Mill Creek	0.040	0.050 – 0.100
Saw Mill River	0.014 – 0.090	0.020 – 0.100
Saw Mill River West Channel	0.014 – 0.090	0.020 – 0.100
Sheldrake River	0.030 – 0.050	0.016 – 0.120
Shrub Oak Brook	0.035 – 0.045	0.040 – 0.100
Shrub Oak Brook Tributary 1	0.045	0.050 – 0.070
South Fox Meadow Brook	0.020	0.030 – 0.080

TABLE 6 – MANNING'S "n" VALUES - continued

Stream	Channel "n"	Overbank "n"
Sprain Brook	0.030 – 0.045	0.050 – 0.100
Sprout Brook	0.020 – 0.040	0.060 – 0.065
Stone Hill River	0.025 – 0.045	0.030 – 0.100
Sunnyside Brook	0.060 – 0.080	0.030 – 0.045
Sunnyside Brook	0.060 – 0.080	0.030 – 0.045
Tibbetts Creek	0.035 – 0.045	0.013 – 0.120
Titicus River	0.040 – 0.055	0.070 – 0.100
Tributary 1 to the Wampus River	0.015 – 0.080	0.030 – 0.100
Tributary 2 to the Wampus River	0.015 – 0.050	0.070
Tributary 3 to the Wampus River	0.015 – 0.040	0.050
Tributary to Laurel Reservoir	0.015 – 0.080	0.100
Tributary to Mill River	0.015 – 0.080	0.100
Troublesome Brook Reach 1	0.015 – 0.100	0.015 – 0.100
Unnamed Tributary to Plum Brook	0.045 – 0.100	0.030 – 0.100
Wampus River	0.015 – 0.060	0.040 – 0.100
West Branch Blind Brook	0.035	0.060 – 0.120
Wickers Creek	0.035 – 0.050	0.060 – 0.100
Woodlands Road Brook 1	0.016 – 0.050	0.016 – 0.100
Woodlands Road Brook 2	0.030 – 0.040	0.016 – 0.100

3.3 Coastal Hydrologic Analyses

The principal source materials used for the wave height analysis are aerial photographs. The photographs are used to determine physical features and the type, size, and density of vegetation and physical features. Topographic maps along the shoreline. These maps are used to calculate wave heights, and for plotting elevations and boundaries of the Flood Hazard Zones. Stillwater elevations used were taken from the Dewberry & Davis publication Tidal Flood Profiles of the Connecticut Coastline of Long Island Sound (Dewberry & Davis, February 1982). USGS topographic maps for Mamaroneck, New York-Connecticut and Mount Vernon, New York, were used for the placement of transects and fetch calculations (USGS, Mamaroneck New York-Connecticut, 1967; Mount Vernon, New York, 1960).

The methodology for analyzing the effects of wave heights associated with coastal storm surge flooding is described in the National Academy of Sciences report (National Academy of Sciences, 1977). This method is based on three major concepts. First, depth-limited waves in shallow water reach a maximum breaking height that is equal to 0.78 times the stillwater depth. The wave crest is 70 percent of the total wave height above the stillwater level. The second major concept is that wave height may be diminished by dissipation of energy due to the presence of obstructions such as sand dunes, dikes, and seawalls, buildings and vegetation. The amount of energy dissipation is a function of the physical characteristics of the obstruction and is determined by procedures described in the

National Academy of Sciences report. The third major concept is that wave height can be regenerated in open fetch areas due to the transfer of wind energy to the water. This added energy is related to fetch length and depth.

Tidal frequency-elevation relationships for Long Island Sound were developed using the following analysis. Tidal frequency-elevation relationships for the Willets Point, New York, and Stamford, Connecticut tidal gaging stations were developed first.

The Willets Point tidal gaging station frequency-elevation relationship was developed by applying the Hazen Frequency Formula (Hazen, 1940), to the yearly peak tides as recorded and published by the National Oceanic and Atmospheric Administration (U.S. Department of Commerce, 1976):

$$P = \frac{100\ (M-0.5)}{Y}$$

Where:

P = percent chance of occurrence in any one year
M = rank of event
Y = number of years of record

The upper portion of the curve was then adjusted to meet the Standard Project Hurricane tidal elevation developed by the USACE, New York District, at this gage (USACE, June 1972).

The Standard Project Hurricane tidal elevation was developed by transposing the Cape Hatteras hurricane of September 14, 1944, to a path critical to Long Island Sound. The resulting surge was added to the mean high tide in the study area. A wind setup was then added, resulting in the adopted 0.2-percent annual chance tidal frequency-elevation. The Cape Hatteras hurricane of 1944 is representative of the most severe combination of meteorological conditions which are considered reasonably characteristic of the region, according to Standard Project Hurricane indications developed by the USACE (USACE, June 1973).

The Stamford tidal gaging station frequency-elevation relationship, developed by the USACE, New England Division, in their report Tidal Hydrology, Long Island Sound Regional Study (USACE, June 1973), was used as a basis for the Stamford frequency-elevation curve in this report. Some interpolation was done to meet the Standard Project Hurricane tidal elevation (the 0.2-percent annual chance tidal elevation at this gage), as provided by the USACE, New York District.

Wave heights were computed along transects (cross section lines) that were located along the coastal areas, as illustrated in Figure 1, in accordance with the Users Manual for Wave Height Analysis (FEMA, February 1981). The transects were located with consideration given to the physical and cultural characteristics of the land so that they would closely represent conditions in their locality.

Transects were spaced close together in areas of complex topography and dense development. In areas having more uniform characteristics, they are spaced at larger intervals. It was also necessary to locate transects in areas were unique flooding existed and in areas where computed wave heights varied significantly between adjacent transects.

Each transect was taken perpendicular to the shoreline and extended inland to a point where wave action ceased. Along each transect, wave heights and elevations were computed considering the combined effects of changes in ground elevation, vegetation, and physical features. The stillwater elevations for the 1-percent annual chance flood were used as the starting elevations for these computations. Wave heights were calculated to the nearest 0.1 foot, and wave elevations were determined at whole-foot increments along the transects. The location of the 3-foot breaking wave for determining the terminus of the V zone (area with velocity wave action) was also computed at each transect. Table 7, "Transect Descriptions," provides a listing of the transects location and stillwater starting elevations, as well as maximum wave crest elevations.

TABLE 7 - TRANSECT DESCRIPTIONS

TRANSECT	LOCATION	ELEVATION (FEET NAVD) STILLWATER[1]	WAVE CREST[2]
1	South corporate limits to Glen Island	10.9	14.1
2	Davids Island	10.9	17.1
3	Glen Island to Pine Island	10.9	17.1
4	Pine Island to Echo Bay Place extended	10.8	17.1
5	Echo Bay Place extended to Duck Point	10.8	17.1

[1]Because of map scale limitations, the 100-year stillwater may not be shown on the FIRM.
[2]Because of map scale limitations, the maximum wave elevation may not be shown on the FIRM.

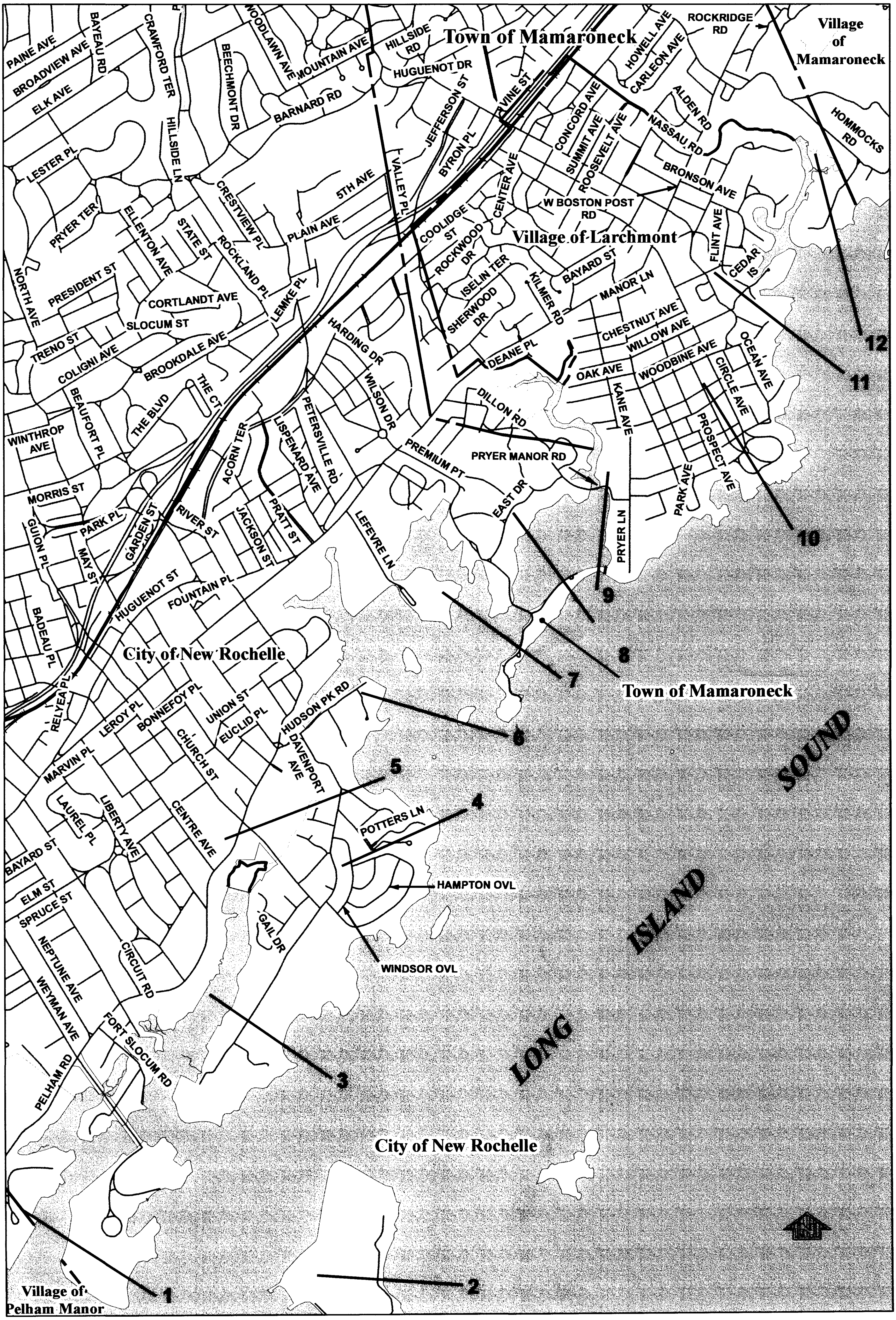


FIGURE 1

FEDERAL EMERGENCY MANAGEMENT AGENCY

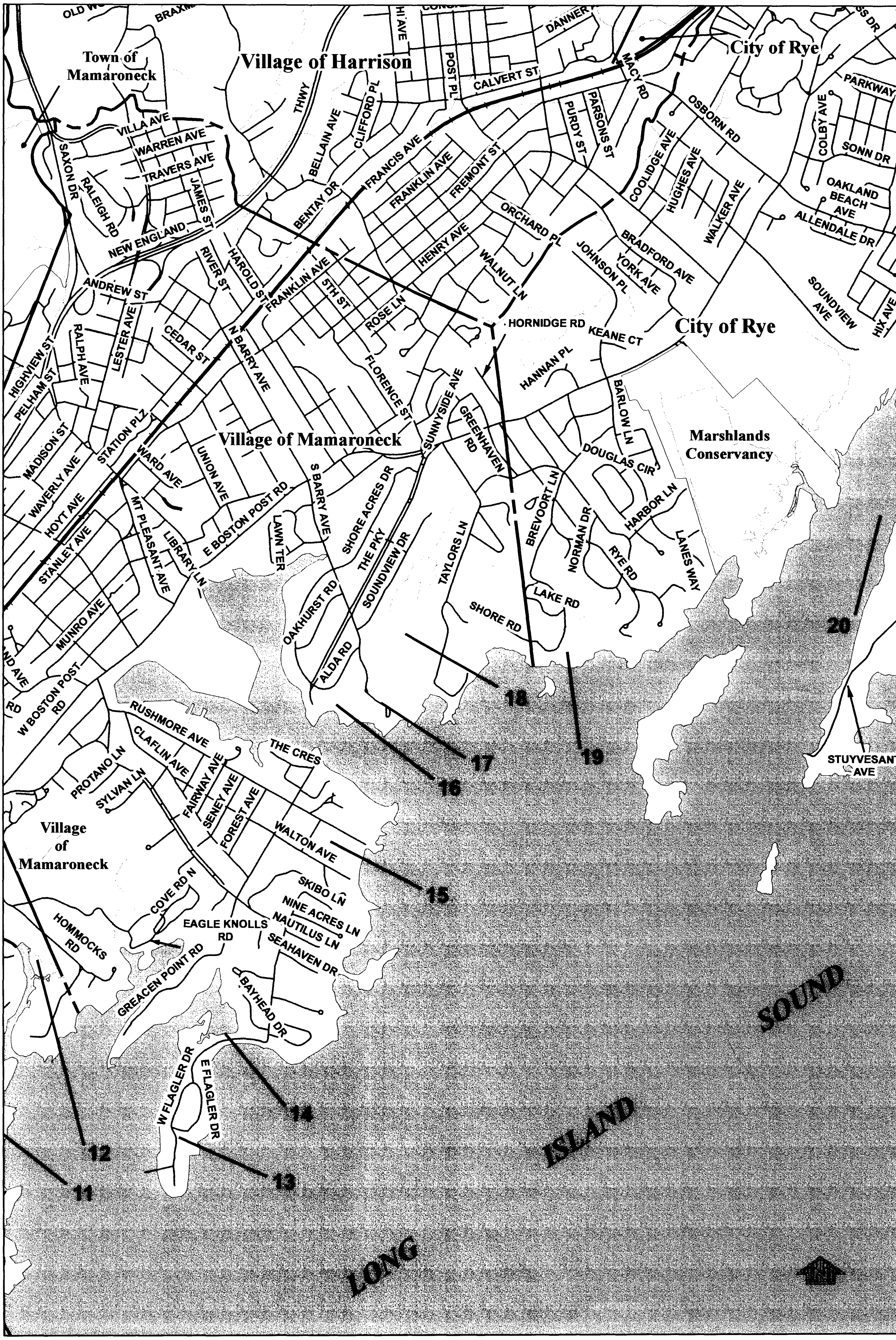
WESTCHESTER COUNTY, NY

(ALL JURISDICTIONS)

APPROXIMATE SCALE

1400 0 1400 2800 4200 Feet

TRANSECT LOCATION MAP



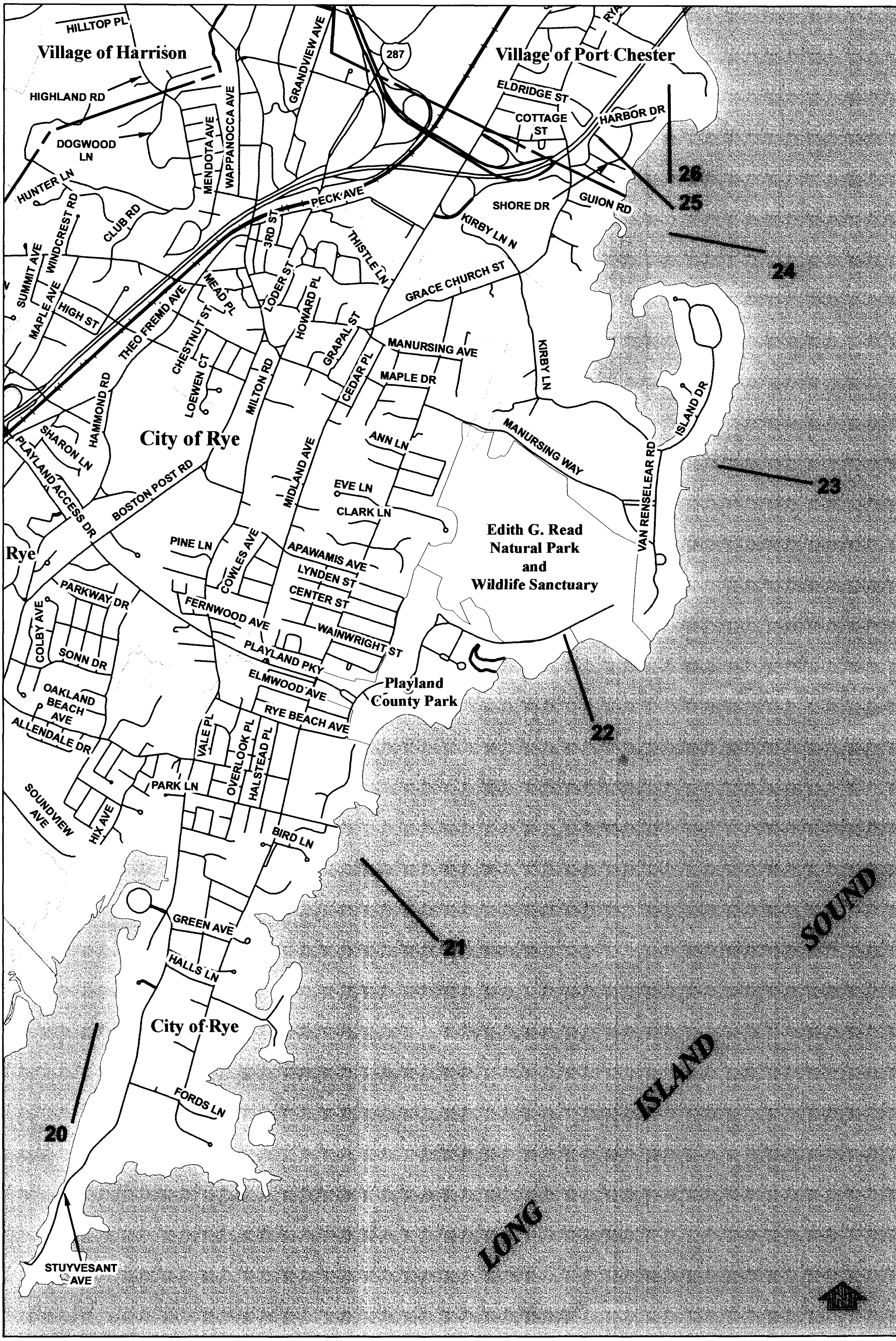
FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY
(ALL JURISDICTIONS)

APPROXIMATE SCALE
1400 0 1400 2800 4200 Feet

TRANSECT LOCATION MAP

FIGURE 1



FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY

(ALL JURISDICTIONS)

TRANSECT LOCATION MAP

FIGURE 1

TABLE 7 - TRANSECT DESCRIPTIONS - continued

TRANSECT	LOCATION	ELEVATION (FEET NAVD) STILLWATER[1]	ELEVATION (FEET NAVD) WAVE CREST[2]
6	Duck Point to Echo Island	10.8	17.1
7	Echo Island to Premium Point Road extended	10.7	16.1
8	From Larchmont/Mamaroneck corporate limits to Premium Point	10.7	16.1
9	Premium Mill Pond shoreline and Premium River shoreline	10.8	16.1
10	Southeast corner of Premium Mill Pond to Bay Avenue, extended	10.8	16.1
11	Bay Avenue, extended, to northern corporate limits	10.7	16.1
12	Larchmont Harbor	10.7	17.1
13	Western corporate limits to approximately 1,500 feet east of western corporate limits	10.7	17.1
14	Approximately 1,500 feet east of western corporate limits to Seven Oaks Lane, extended	10.7	17.1
15	Seven Oaks Lane, extended, to Orienta Point	10.6	16.1
16	Orienta Point to mouth of Otter Creek	10.6	16.1
17	Mouth of Otter Creek to approximately 1,400 feet east of mouth of Otter Creek	10.6	16.1
18	Approximately 1,400 feet east of mouth of Otter Creek to eastern corporate limits	10.6	14.1

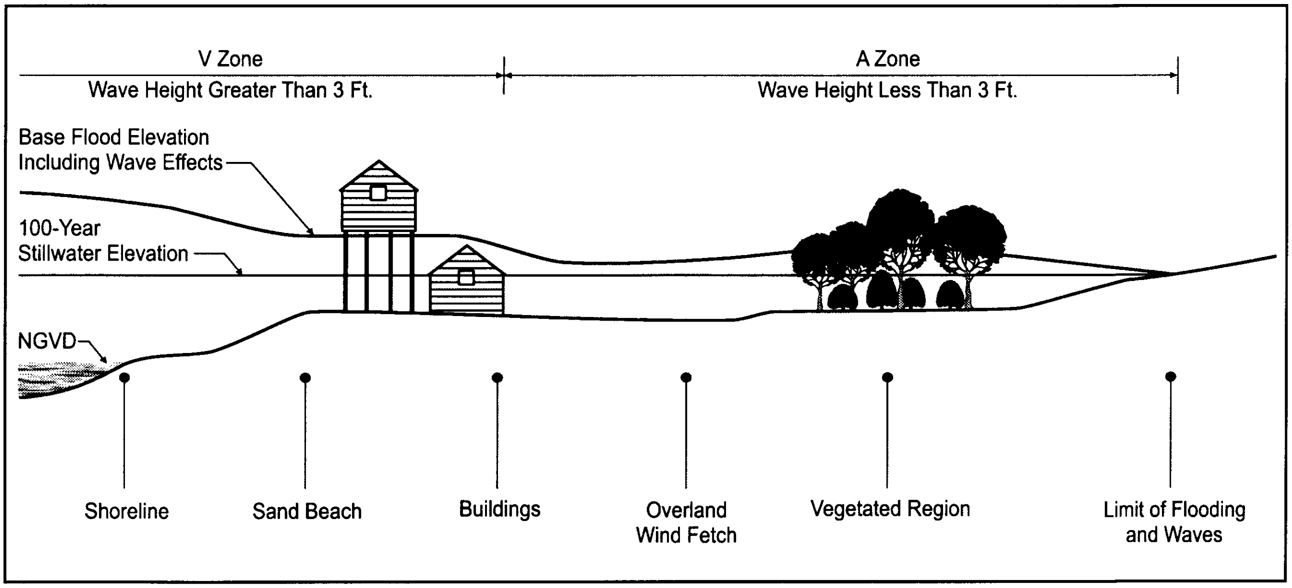
[1]Because of map scale limitations, the 100-year stillwater may not be shown on the FIRM.
[2]Because of map scale limitations, the maximum wave elevation may not be shown on the FIRM.

TABLE 7 - TRANSECT DESCRIPTIONS - continued

TRANSECT	LOCATION	ELEVATION (FEET NAVD) STILLWATER[1]	WAVE CREST[2]
19	From the southwestern corporate limits to Maries Neck	10.6	16.1
20	From Maries Neck to Milton Point	10.6	16.1
21	From Milton Point to Playland Beach	10.5	16.1
22	From Playland Beach to the southern end of Manursing Island	10.5	16.1
23	From the southern end of Manursing Island to the northern end of North Manursing Island	10.4	17.1
24	From the northern end of North Manursing Island to the northeastern corporate limits	10.3	17.1
25	Southern corporate limits to access road off Harbor Drive, extended	10.3	15.1
26	Access road off Harbor Drive, extended, to the Byram River	10.3	14.1

[1]Because of map scale limitations, the 100-year stillwater may not be shown on the FIRM.
[2]Because of map scale limitations, the maximum wave elevation may not be shown on the FIRM.

Figure 2 is a profile for a typical transect illustrating the effects of energy dissipation and regeneration on a wave as it moves inland. This figure shows the wave elevations being decreased by obstructions, such as buildings, vegetation, and rising ground elevations, and being increased by open, unobstructed wind fetches.



TRANSECT SCHEMATIC Figure 2

After analyzing wave heights along each transect, wave elevations were interpolated between transects. Various source data were used in the interpolation, including the topographic work maps, aerial photographs, and engineering judgment. Controlling features affecting the elevations were identified and considered in relation to their positions at a particular transect and their variation between transects.

3.4 Coastal Hydraulic Analyses

Areas within the communities studied by detailed engineering methods have base flood elevations established in A and V Zones. In coastal areas affected by wave action, base flood elevations are generally maximum at the normal open shoreline. These elevations generally decrease in a landward direction at a rate dependent on the presence of obstructions capable of dissipating the wave energy. Where possible, changes in base flood elevations have been shown in 1-foot increments on the FIRMs. Base flood elevations shown in the wave action areas represent the average elevation within the zone. Current program regulations generally require that all new construction be elevated such that the first floor, including basement, is above the base flood elevation in A and V Zones.

The USACE has established the 3-foot breaking wave as the criterion for identifying coastal high hazard zones (USACE, June 1975). This was based on a study of wave action effects on structures. This criterion has been adopted by FEMA for the determination of V Zones. Because of the additional hazards associated with high-energy waves, the NFIP regulations require much more stringent floodplain management measures in there areas, such as elevating structures on piles or piers. In addition, insurance rates in V Zones are higher than those in A Zones with similar numerical designations.

The location of the V Zone is determined by the 3-foot breaking wave as discussed previously. The detailed analysis of wave heights preformed in this study allowed a much more accurate location on the V Zone to be established. The V Zone generally extends inland to the point where the 1-percent annual chance flood depth is insufficient to support a 3-foot breaking wave.

Qualifying bench marks within a given jurisdiction that are cataloged by the National Geodetic Survey (NGS) and entered into the National Spatial Reference System (NSRS) as First or Second Order Vertical and have a vertical stability classification of A, B, or C are shown and labeled on the FIRM with their 6-character NSRS Permanent Identifier.

Bench marks cataloged by the NGS and entered into the NSRS vary widely in vertical stability classification. NSRS vertical stability classifications are as follows:

- Stability A: Monuments of the most reliable nature, expected to hold position/elevation well (e.g., mounted in bedrock)
- Stability B: Monuments which generally hold their position/elevation well (e.g., concrete bridge abutment)
- Stability C: Monuments which may be affected by surface ground movements (e.g., concrete monument below frost line)
- Stability D: Mark of questionable or unknown vertical stability (e.g., concrete monument above frost line, or steel witness post)

In addition to NSRS bench marks, the FIRM may also show vertical control monuments established by a local jurisdiction; these monuments will be shown on the FIRM with the appropriate designations. Local monuments will only be placed on the FIRM if the community has requested that they be included, and if the monuments meet the aforementioned NSRS inclusion criteria.

To obtain current elevation, description, and/or location information for bench marks shown on the FIRM for this jurisdiction, please contact the Information Services Branch of the NGS at (301) 713-3191, or visit their Web site at www.ngs.noaa.gov.

It is important to note that temporary vertical monuments are often established during the preparation of a flood hazard analysis for the purpose of establishing local vertical control. Although these monuments are not shown on the FIRM, they may be found in the Technical Support Data Notebook associated with this FIS and FIRM. Interested individuals may contact FEMA to access this data.

3.5 Vertical Datum

All FISs and FIRMs are referenced to a specific vertical datum. The vertical datum provides a starting point against which flood, ground, and structure elevations can be referenced and compared. Until recently, the standard vertical datum in use for newly created or revised FISs and FIRMs was the National Geodetic Vertical Datum of 1929 (NGVD 29). With the finalization of the North American Vertical Datum of 1988 (NAVD 88), many FIS reports and FIRMs are being prepared using NAVD 88 as the referenced vertical datum.

All flood elevations shown in this FIS report and on the FIRM are referenced to NAVD 88. Structure and ground elevations in the community must, therefore, be referenced to NAVD 88. It is important to note that adjacent communities may be referenced to NGVD 29. This may result in differences in base flood elevations across the corporate limits between the communities.

Prior versions of the FIS report and FIRM were referenced to NGVD 29. When a datum conversion is effected for an FIS report and FIRM, the Flood Profiles, base flood elevations (BFEs) and ERMs reflect the new datum values. To compare structure and ground elevations to 1-percent annual chance (100-year) flood elevations shown in the FIS and on the FIRM, the subject structure and ground elevations must be referenced to the new datum values.

As noted above, the elevations shown in the FIS report and on the FIRM for Westchester County are referenced to NAVD 88. Ground, structure, and flood elevations may be compared and/or referenced to NGVD 29 by applying a standard conversion factor. The conversion factor to NGVD 29 is +1.0 foot. The BFEs shown on the FIRM represent whole-foot rounded values. For example, a BFE of 102.4 will appear as 102 on the FIRM and 102.6 will appear as 103. Therefore, users that wish to convert the elevations in this FIS to NGVD 29 should apply the stated conversion factor(s) to elevations shown on the Flood Profiles and supporting data tables in the FIS report, which are shown at a minimum to the nearest 0.1 foot.

For more information on NAVD 88, see Converting the National Flood Insurance Program to the North American Vertical Datum of 1988, FEMA Publication FIA-20/June 1992, or contact the Spatial Reference System Division, National Geodetic Survey, NOAA, Silver Spring Metro Center, 1315 East-West Highway, Silver Spring, Maryland 20910 (Internet address http://www.ngs.noaa.gov).

4.0 FLOODPLAIN MANAGEMENT APPLICATIONS

The NFIP encourages State and local governments to adopt sound floodplain management programs. To assist in this endeavor, each FIS provides 1-percent annual chance floodplain data, which may include a combination of the following: 10-, 2-, 1-, and 0.2-percent annual chance flood elevations; delineations of the 1- and 0.2-percent annual chance floodplains; and 1-percent annual chance floodway. This information is presented on the FIRM and in many components of the FIS, including Flood Profiles, Floodway Data tables, and Summary of Stillwater Elevation tables. Users should reference the data presented in the FIS as well as additional information that may be available at the local community map repository before making flood elevation and/or floodplain boundary determinations.

4.1 Floodplain Boundaries

To provide a national standard without regional discrimination, the 1-percent annual chance (100-year) flood has been adopted by FEMA as the base flood for floodplain management purposes. The 0.2-percent annual chance (500-year) flood is employed to indicate additional areas of flood risk in the county. For the streams studied in detail, the 100- and 500-year floodplain boundaries have been delineated using the flood elevations determined at each cross section. Between cross sections, the boundaries were interpolated using bare earth digital elevation data provide by Westchester County GIS. The topographic data was derived primarily from photogrammetric methods, supplemented by Light Detection And Ranging data. The bare earth mass points and 3-D breaklines were primarily compiled, photogrammetrically, from 1"=800' scale photography. Water surface elevation triangular irregular networks (TINs) were created from the model cross sections and intersected with the bare earth ground TIN for the floodplain corridor. The resulting floodplains were smoothed and incorporated in the DFIRM.

Similarly, using datum-converted effective flood profiles for non-revised, detailed streams, all flood boundaries were made current with the topography supplied by the county to FEMA.

Floodplain boundaries compiled from previous texts are listed below:

In the Village of Rye Brook, boundaries were interpolated using topographic maps at a scale of 1:200, with a contour interval of 20 feet (New York State Department of Transportation, 1952).

In the Town of Harrison, City of New Rochelle, Town of Yorktown, Village of Port Chester, Village of Pleasantville, Village of Briarcliff Manor, Village of Dobbs Ferry, and Village of Hastings on Hudson, boundaries were interpolated using topographic maps at a scale of 1:2,400, with a contour interval of 5 feet (USACE, June 1972).

In the Town of Mount Pleasant, Village of Ossining, and Town of Ossining, boundaries were interpolated using topographic maps at a scale of 1:24,000 with a contour interval of 10 feet (Frederik D. Clark Associates, 1977).

In the Town of Mamaroneck, boundaries were interpolated using topographic maps at a scale of 1:24,000 with a contour interval of 20 feet and topographic maps at a scale of 1:4,800 with a contour interval of 2 feet (USGS, 1967; Aero Cartographics, 1986).

In the Town of Greenburgh, boundaries were interpolated using topographic maps at a scale of 1:12,000 with a contour interval of 10 feet.

In the City of White Plains and Village of Ardsley, boundaries were interpolated using topographic maps at a scale of 1:200 with a contour interval of 5 feet (New York State Department of Public Works, 1966).

In the Town of North Castle, Town of North Salem, Village of Mount Kisco, Town of Pound Ridge, and Town of Somers, boundaries were interpolated using topographic maps at a scale of 1:4,800 with a contour interval of 4 feet (Topo-Metrics, 1981).

In the City of Mount Vernon, Village of Elmsford, Village of North Tarrytown, City of Yonkers, Village of Pelham Manor, Town of Eastchester, Village of Bronxville, Village of Scordale, Village of Ruckahoe, Village of Tarrytown, and Village of Irvington, boundaries were interpolated using topographic maps at a scale of 1:2,400, with a contour interval of 5 feet (Geod Aerial Mapping, 1976; State of New York, 1964).

In the Town of Bedford, boundaries were interpolated using topographic maps at a scale of 1:1,000, with a contour interval of 10 feet (Westchester County, 1974).

In the City of Rye, boundaries were interpolated using topographic maps at a scale of 1:1,200 with a contour interval of 2 feet (Fairchild, 1957).

In the City of Peekskill, boundaries were interpolated using topographic maps at scales of 1:24,000 and 1"=1,000', with contour intervals of 10 feet (USGS, 1957; Clark, 1977).

For the flooding sources studied by approximate methods, the boundaries of the 1-percent annual chance floodplains were delineated using topographic maps taken from the previously printed FIS reports, FHBMs, and/or FIRMs for all of the incorporated and unincorporated jurisdictions within Westchester County.

The 1- and 0.2-percent annual chance floodplain boundaries are shown on the FIRM (Exhibit 2). On this map, the 1-percent annual chance floodplain boundary corresponds to the boundary of the areas of special flood hazards (Zones A and AE), and the 0.2-percent annual chance floodplain boundary corresponds to the boundary of areas of moderate flood hazards. In cases where the 1- and 0.2-percent annual chance floodplain boundaries are close together, only the 1-percent annual chance floodplain boundary has been shown. Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

For the streams studied by approximate methods, only the 1-percent annual chance floodplain boundary is shown on the FIRM (Exhibit 2).

4.2 Floodways

Encroachment on floodplains, such as structures and fill, reduces flood-carrying capacity, increases flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself. One aspect of floodplain management involves balancing the economic gain from floodplain development against the resulting increase in flood hazard. For purposes of the NFIP, a floodway is used as a tool to assist local communities in this aspect of floodplain management. Under this concept, the area of the 1-percent annual chance floodplain is divided into a floodway and a floodway fringe. The floodway is the channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment so that the 1-percent annual chance flood can be carried without substantial increases in flood heights. Minimum federal standards limit such increases to 1.0 foot, provided that hazardous velocities are not produced. The floodways in this FIS are presented to local agencies as minimum standards that can be adopted directly or that can be used as a basis for additional floodway studies.

The floodways presented in this FIS were computed for certain stream segments on the basis of equal conveyance reduction from each side of the floodplain. Floodway widths were computed at cross sections. Between cross sections, the floodway boundaries were interpolated. The results of the floodway computations are tabulated for selected cross sections (Table 8). The computed floodways are shown on the FIRM (Exhibit 2). In cases where the floodway and 1-percent annual chance floodplain boundaries are either close together or collinear, only the floodway boundary is shown. Portions of the floodway for the Bronx River, Byram River Reach 1, and Hutchinson River extend beyond the county boundary.

Encroachment into areas subject to inundation by floodwaters having hazardous velocities aggravates the risk of flood damage, and heightens potential flood hazards by further increasing velocities. A listing of stream velocities at selected cross sections is provided in Table 8, "Floodway Data." In order to reduce the risk of property damage in areas where the stream velocities are high, the community may wish to restrict development in areas outside the floodway.

Near the mouths of streams studied in detail, floodway computations are made without regard to flood elevations on the receiving water body. Therefore, "Without Floodway" elevations presented in Table 8 for certain downstream cross sections of Annsville Creek, Bear Gutter Creek, Beaver Swamp Brook, Blind Brook, Crook Brook, Croton River, East Branch Blind Brook, Furnace Brook, Grassy Sprain Brook, Hillside Avenue Brook, Hutchinson River, Kensico Road Tributary, Kisco River, Mamaroneck River Lower Reach, Nelson Creek, Peekskill Hollow Brook, Peekskill Hollow Brook Tributary, Sheldrake River, Shrub Oak Brook Tributary 1, Sprout Brook, Troublesome Brook Reach 1, Wampus River, and Wickers Creek are lower than the regulatory flood elevations in that area, which must take into account the 100-year flooding due to backwater from other sources.

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Annsville Creek								
A	1,265[1]	*	2,937	1.3	6.6	3.6[4]	4.4	0.8
B	1,770[1]	*	2,209	1.7	6.6	3.6[4]	4.4	0.8
C	3,635[1]	*	2,667	1.4	6.6	3.6[4]	4.4	0.8
Barney Brook								
A	329[2]	20	272	3.6	39.7	39.7	40.3	0.6
B	926[2]	26	91	10.8	54.2	54.2	54.2	0.0
C	1,480[2]	61	310	3.2	71.0	71.0	71.7	0.7
D	1,789[2]	57	287	3.4	77.9	77.9	78.9	1.0
E	2,323[2]	43	164	6.0	89.7	89.7	90.0	0.3
F	3,270[2]	40	237	2.9	120.5	120.5	121.0	0.5
G	3,675[2]	43	96	7.1	138.6	138.6	138.6	0.0
H	4,271[2]	40	156	4.3	159.8	159.8	160.3	0.5
I	4,772[2]	34	111	6.1	195.6	195.6	195.7	0.1
J	5,302[2]	80	455	1.5	231.2	231.2	232.0	0.8
K	5,807[2]	70	131	5.2	237.7	237.7	238.1	0.4
L	6,263[2]	80	188	3.6	240.3	240.3	241.2	0.9
M	6,836[2]	60	260	2.6	269.1	269.1	269.7	0.6
N	7,485[2]	495	2,804	0.2	290.3	290.3	290.4	0.1
O	8,130[2]	22	42	7.8	294.7	294.7	294.7	0.0
P	8,843[2]	50	55	6.0	331.9	331.9	331.9	0.0
Barney Brook Tributary								
A	236[3]	22	99	3.3	110.6	110.6	111.1	0.5
B	706[3]	6	31	10.8	132.9	132.9	133.5	0.5
C	1,218[3]	84	552	0.6	155.3	155.3	156.2	1.0
D	1,725[3]	59	345	1.0	158.8	158.8	159.5	0.7

[1]Feet above confluence with Hudson River
[2]Feet above limit of detailed study
[3] Feet above confluence with Barney Brook
[4]Elevation computed without consideration of backwater effects from Hudson River

* Floodway coincident with channel banks

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY
(ALL JURISDICTIONS)

FLOODWAY DATA

ANNSVILLE CREEK – BARNEY BROOK – BARNEY BROOK TRIBUTARY

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Barney Brook Tributary (continued)								
E	2,210[1]	29	151	2.2	163.5	163.5	164.3	0.8
F	2,690[1]	43	132	2.5	168.1	168.1	169.0	0.9
G	3,164[1]	17	53	6.2	171.7	171.7	172.6	0.9
H	3,625[1]	50	68	4.9	210.9	210.9	211.3	0.4
I	4,006[1]	23	55	6.1	249.0	249.0	249.6	0.6
Bear Gutter Creek								
A	1,196[2]	26	83	5.5	357.2	353.4[4]	353.3	0.0
B	2,016[2]	26	92	5.0	357.2	357.2	357.3	0.1
C	2,816[2]	38	150	3.1	361.1	361.1	361.4	0.3
D	4,045[2]	60	205	2.2	366.6	366.6	366.9	0.3
Beaver Swamp Brook								
A	2,022[3]	28	51	7.7	11.5	4.4[5]	4.6	0.2
B	2,729[3]	48	87	4.4	22.8	22.8	22.8	0.0
C	2,895[3]	42	142	2.7	23.2	23.2	23.8	0.6
D	3,212[3]	25	97	4.0	27.2	27.2	28.1	0.9
E	3,552[3]	13	41	9.2	28.4	28.4	28.5	0.1
F	3,668[3]	28	134	2.9	31.3	31.3	31.4	0.1
G	4,345[3]	31	183	2.1	32.3	32.3	33.1	0.8
H	4,529[3]	33	202	1.9	32.5	32.5	33.4	0.9
I	4,808[3]	68	339	2.0	32.8	32.8	33.7	0.9
J	5,631[3]	77	406	1.7	33.3	33.3	34.2	0.9
K	7,463[3]	221	1,385	0.4	33.7	33.7	34.7	1.0
L	7,636[3]	242	1,928	0.3	33.7	33.7	34.7	1.0
M	8,003[3]	356	2,310	0.3	33.8	33.8	34.8	1.0

[1]Feet above confluence with Barney Brook
[2]Feet above confluence with Kensico Reservoir
[3]Feet above limit of floodway
[4]Elevation computed without consideration of backwater effects from Kensico Reservoir
[5]Elevation computed without consideration of backwater effects from Long Island Sound

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY
(ALL JURISDICTIONS)

FLOODWAY DATA

BARNEY BROOK TRIBUTARY – BEAR GUTTER CREEK – BEAVER SWAMP BROOK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Beaver Swamp Brook (continued)								
N	9,294	543	2,401	0.3	33.8	33.8	34.8	1.0
O	9,934	34	128	5.1	33.8	33.8	34.7	0.9
P	10,053	42	219	3.0	35.3	35.3	36.0	0.7
Q	10,519	40	203	3.3	35.2	35.2	36.1	0.9
R	10,614	40	266	2.5	36.0	36.0	36.9	0.9
S	10,810	69	388	1.7	36.7	36.7	37.6	0.9
T	11,550	45	343	1.8	37.8	37.8	38.3	0.5
U	11,772	76	478	1.3	40.7	40.7	40.7	0.0
V	12,595	77	698	1.4	40.8	40.8	41.2	0.4
W	12,778	88	790	1.2	41.2	41.2	41.6	0.4
X	14,528	133	694	1.4	41.3	41.3	42.3	1.0
Y	14,960	169	1,113	0.9	41.6	41.6	42.5	0.9
Z	16,321	39	201	4.4	42.8	42.8	43.6	0.8
AA	16,393	48	420	2.1	47.1	47.1	47.1	0.0
AB	16,577	120	998	0.9	47.2	47.2	47.2	0.0
AC	17,690	33	96	9.3	47.8	47.8	48.0	0.2
AD	17,731	25	88	10.1	49.6	49.6	49.6	0.0
AE	18,059	45	144	6.2	51.8	51.8	52.2	0.4
AF	19,014	89	838	1.1	54.7	54.7	55.6	0.9
AG	19,818	54	120	7.4	56.7	56.7	56.9	0.2
AH	19,992	59	147	6.1	64.4	64.4	64.8	0.4
AI	20,033	186	1,324	0.7	72.1	72.1	72.4	0.3
AJ	20,519	82	290	3.1	73.3	73.3	74.1	0.8
AK	21,182	42	140	5.4	77.2	77.2	77.9	0.7
AL	21,346	112	1,410	0.5	80.1	80.1	81.0	0.9
AM	21,689	62	698	1.1	80.1	80.1	81.1	1.0

[1]Feet above limit of floodway

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY (ALL JURISDICTIONS)

FLOODWAY DATA

BEAVER SWAMP BROOK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Blind Brook								
A	1,088	111	558	5.9	12.5	4.1[2]	4.1	0.0
B	1,756	113	954	3.4	12.5	5.2[2]	5.3	0.1
C	2,026	112	898	3.6	12.5	8.5[2]	8.6	0.1
D	5,473	431	2,318	1.4	12.5	9.8[2]	10.1	0.3
E	5,620	425	2,569	1.3	12.5	10.8[2]	11.1	0.3
F	8,617	376	1,854	1.8	12.5	11.7[2]	12.3	0.6
G	8,791	376	1,635	2.0	13.0	13.0	13.3	0.3
H	9,945	178	790	4.1	14.0	14.0	14.5	0.5
I	10,132	115	737	4.4	16.7	16.7	17.0	0.3
J	11,475	91	525	6.2	18.5	18.5	19.4	0.9
K	11,556	191	960	3.4	21.1	21.1	21.3	0.2
L	12,248	223	1,051	2.8	22.5	22.5	23.3	0.8
M	12,977	90	1,265	2.4	30.3	30.3	30.3	0.0
N	18,371	120	770	3.5	32.1	32.1	32.9	0.8
O	20,679	46	218	11.8	35.0	35.0	35.7	0.7
P	22,113	50	546	4.7	58.7	58.7	58.9	0.2
Q	23,398	127	484	4.9	63.4	63.4	63.7	0.3
R	24,205	59	339	7.0	69.4	69.4	70.4	1.0
S	25,074	37	238	10.0	74.3	74.3	75.2	0.9
T	27,024	89	378	5.7	88.8	88.8	88.8	0.0
U	27,556	117	554	3.9	94.5	94.5	94.9	0.4
V	27,943	123	297	7.3	99.1	99.1	99.1	0.0
W	28,525	53	247	8.7	104.4	104.4	105.2	0.8
X	31,426	54	169	9.1	126.8	126.8	126.8	0.0
Y	31,959	47	155	9.9	133.2	133.2	133.2	0.0
Z	32,143	70	461	3.3	139.0	139.0	139.0	0.0

[1]Feet above confluence with Long Island Sound
[2]Elevation computed without consideration of backwater effects from Long Island Sound

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY (ALL JURISDICTIONS)

FLOODWAY DATA

BLIND BROOK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Blind Brook (continued)								
AA	32,841	73	315	2.1	146.6	146.6	146.6	0.0
AB	33,253	33	78	8.5	148.3	148.3	148.3	0.0
AC	33,387	47	189	3.5	149.8	149.8	149.8	0.0
AD	33,942	80	152	4.3	156.2	156.2	156.2	0.0
AE	34,146	72	318	4.8	160.3	160.3	160.3	0.0
AF	35,018	27	129	11.9	167.3	167.3	167.4	0.1
AG	35,964	31	191	6.0	187.0	187.0	187.5	0.5
AH	36,097	180	715	1.6	215.5	215.5	215.8	0.3
AI	37,391	57	176	6.5	216.4	216.4	216.5	0.1
AJ	38,176	53	207	5.5	224.2	224.2	224.3	0.1
AK	38,530	36	204	5.6	231.3	231.3	232.0	0.7
AL	39,081	39	116	9.8	239.9	239.9	239.9	0.0
AM	41,540	60	110	7.7	251.1	251.1	251.1	0.0
AN	42,181	35	130	6.5	257.2	257.2	257.6	0.4
AO	43,546	127	329	2.6	261.8	261.8	261.9	0.1
AP	45,238	235	489	1.7	267.2	267.2	267.5	0.3
AQ	45,898	52	119	5.1	273.5	273.5	273.9	0.4
AR	46,069	59	97	6.2	278.1	278.1	278.1	0.0
AS	46,675	48	81	7.4	288.2	288.2	288.2	0.0
AT	46,915	34	72	8.3	307.5	307.5	307.5	0.0
AU	47,472	29	79	7.6	335.4	335.4	335.4	0.0
AV	47,650	56	98	7.0	344.0	344.0	344.0	0.0
AW	48,293	69	115	7.4	357.1	357.1	357.1	0.0
AX	48,787	60	179	4.7	359.2	359.2	359.4	0.2
AY	50,084	22	79	10.8	362.6	362.6	362.7	0.1

[1] Feet above confluence with Long Island Sound

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY
(ALL JURISDICTIONS)

FLOODWAY DATA

BLIND BROOK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Branch Brook								
A	3,234[1]	68	337	1.5	281.3	281.3	281.9	0.6
B	3,717[1]	59	353	1.4	281.5	281.5	282.2	0.7
C	4,607[1]	69	317	1.3	281.9	281.9	281.9	0.0
D	5,072[1]	45	247	1.7	282.9	282.9	282.9	0.0
E	6,382[1]	93	439	1.0	284.4	284.4	284.6	0.2
F	7,352[1]	99	297	1.4	284.5	284.5	284.9	0.3
G	8,392[1]	90	246	1.7	285.2	285.2	285.8	0.6
H	8,592[1]	30	123	3.4	286.1	286.1	286.5	0.4
I	9,737[1]	66	263	1.4	287.2	287.2	287.9	0.7
J	11,186[1]	207	850	0.4	291.9	291.9	292.3	0.4
K	11,977[1]	211	969	0.4	291.9	291.9	292.6	0.7
L	12,648[1]	139	753	0.5	292.0	292.0	292.7	0.7
M	13,995[1]	90	345	1.1	292.2	292.2	292.9	0.7
N	14,679[1]	156	381	0.5	293.8	293.8	294.7	0.9
O	15,531[1]	310	1,483	0.1	298.1	298.1	298.1	0.0
P	15,940[1]	16	28	7.5	312.0	312.0	312.1	0.1
Q	16,562[1]	42	73	2.9	401.7	401.7	402.2	0.5
R	16,751[1]	79	327	0.6	405.4	405.4	405.9	0.5
Branch 1 Hutchinson River								
A	50[2]	25	75	3.2	47.6	47.6	48.5	0.9
B	275[2]	19	37	6.4	54.1	54.1	54.1	0.0
C	760[2]	45	57	4.2	76.7	76.7	77.1	0.4
D	960[2]	57	114	2.1	78.1	78.1	78.4	0.3
Branch 2 Kisco River								
A	3,790[3]	17	44	4.9	343.5	343.5	343.6	0.1
B	4,250[3]	16	45	4.8	344.3	344.3	344.9	0.6
C	5,000[3]	15	71	3.0	346.2	346.2	347.2	1.0

[1]Feet above confluence with Kisco River
[2]Feet above Highbrook Avenue
[3]Feet above limit of detailed study

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY (ALL JURISDICTIONS)

FLOODWAY DATA

BRANCH BROOK – BRANCH 1 HUTCHINSON RIVER – BRANCH 2 KISKO RIVER

TABLE 7

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Brentwood Brook								
A	202[1]	19	33	7.5	37.3	37.3	37.3	0.0
B	798[1]	13	29	89.5	44.9	44.9	44.9	0.0
C	2,208[1]	10	27	9.1	49.7	49.7	49.7	0.0
D	2,639[1]	9	33	7.6	52.7	52.7	52.7	0.0
E	3,581[1]	10	34	6.7	56.3	56.3	56.3	0.0
F	9,842[1]	40	165	3	72.0	72.0	72.8	0.8
G	12,264[1]	70	305	0.7	78.7	78.7	79.6	0.9
H	13,257[1]	30	60	3.7	101.1	101.1	101.3	0.2
I	13,702[1]	28	35	6.3	119.8	119.8	120.5	0.7
Bronx River								
A	111[2]	97	933	3.5	66.3	66.3	66.5	0.2
B	1,220[2]	77	705	4.6	67.1	67.1	67.2	0.1
C	1,792[2]	71[3]	635	5.1	67.6	67.6	68.4	0.8
D	2,334[2]	70	654	4.9	68.6	68.6	69.3	0.6
E	2,912[2]	188	1,016	3.2	69.1	69.1	69.6	0.5
F	3,625[2]	62	529	6.1	69.4	69.4	69.9	0.5
G	4,716[2]	53	517	6.3	71.0	71.0	71.3	0.3
H	5,446[2]	54	566	5.7	71.7	71.7	72.0	0.3
I	5,852[2]	97	830	3.9	73.5	73.5	73.5	0.0
J	6,279[2]	42	566	5.7	75.0	75.0	75.1	0.1
K	6,846[2]	63	800	4.0	75.5	75.5	75.6	0.1
L	7,515[2]	257	1,824	1.8	76.1	76.1	76.6	0.5
M	8,148[2]	336	2,719	1.2	76.2	76.2	76.7	0.5
N	8,757[2]	450	3,178	1.0	76.2	76.2	76.8	0.6
O	9,547[2]	63	721	4.4	76.3	76.3	76.8	0.5
P	9,912[2]	132	975	3.3	77.3	77.3	77.8	0.5

[1]Feet above confluence with Beaver Swamp Brook
[2]Feet above county boundary
[3]Width extends beyond county boundary

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY
(ALL JURISDICTIONS)

FLOODWAY DATA

BRENTWOOD BROOK – BRONX RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Bronx River (continued)								
Q	11,318	56	446	7.1	77.9	77.9	78.3	0.5
R	11,998	68	742	4.2	79.0	79.0	79.7	0.7
S	12,892	94	846	3.7	79.4	79.4	80.2	0.8
T	13,541	180	1,504	2.1	79.7	79.7	80.5	0.8
U	14,343	538	4,099	0.8	80.0	80.0	80.7	0.7
V	15,340	114	913	3.4	80.8	80.8	81.4	0.6
W	15,940	99	861	3.5	83.3	83.3	83.4	0.1
X	16,336	94	1,109	2.3	83.7	83.7	83.9	0.2
Y	17,051	199	1,284	2.0	83.8	83.8	84.0	0.2
Z	17,511	236	1,919	1.3	83.9	83.9	84.3	0.4
AA	18,714	284	1,992	1.3	84.9	84.9	85.3	0.4
AB	19,017	39	218	11.8	86.2	86.2	86.7	0.5
AC	20,039	95	662	3.9	91.7	91.7	92.0	0.3
AD	20,871	190	1,139	2.2	92.0	92.0	92.3	0.3
AE	21,791	175	940	2.7	93.5	93.5	93.7	0.3
AF	23,380	185	402	6.4	98.6	98.6	99.1	0.4
AG	23,819	103	661	3.9	103.5	103.5	103.7	0.3
AH	24,819	496	3,351	0.8	104.1	104.1	104.4	0.3
AI	29,857	130	740	3.2	106.4	106.4	106.8	0.4
AJ	34,948	55	501	4.8	114.7	114.7	115.1	0.4
AK	39,899	102	557	4.1	137.7	137.7	138.7	1.0
AL	45,388	39	273	8.0	156.5	156.5	157.3	0.8
AM	50,177	89	637	3.4	166.8	166.8	167.4	0.6
AN	54,817	55	380	5.4	178.2	178.2	178.8	0.6
AO	59,895	255	1,722	1.1	184.5	184.5	185.2	0.7
AP	65,156	102	554	3.5	188.0	188.0	188.3	0.3

[1]Feet above county boundary

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY (ALL JURISDICTIONS)

FLOODWAY DATA

BRONX RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Bronx River (continued)								
AQ	69,895[1]	427	2,483	0.8	193.5	193.5	194.2	0.8
AR	75,574[1]	96	287	6.7	207.7	207.7	207.7	0.0
Brown Brook								
A	368[2]	21	114	7.8	200.4	200.4	201.4	1.0
B	452[2]	39	701	1.3	218.4	218.4	218.8	0.4
C	4,494[2]	29	192	4.1	218.4	218.4	219.2	0.8
D	4,610[2]	29	284	2.8	223.6	223.6	224.4	0.8
E	6,279[2]	76	175	4.6	223.8	223.8	224.5	0.7
F	6,365[2]	47	103	7.7	229.4	229.4	229.4	0.0
G	6,584[2]	210	652	1.2	231.3	231.3	231.3	0.0
H	7,455[2]	75	208	3.8	232.8	232.8	232.9	0.1
I	7,566[2]	278	1,021	0.8	234.9	234.9	235.8	0.9
J	9,432[2]	394	1,542	0.5	235.0	235.0	236.0	1.0
K	10,307[2]	16	67	9.4	239.7	239.7	240.4	0.7
L	10,355[2]	36	267	2.4	246.1	246.1	246.9	0.8
M	11,296[2]	95	539	1.2	246.2	246.2	247.2	1.0
N	11,936[2]	53	100	6.3	249.2	249.2	249.2	0.0
O	12,727[2]	20	55	9.1	257.8	257.8	258.2	0.4
P	12,834[2]	26	109	4.6	261.7	261.7	262.1	0.4
Q	12,862[2]	96	654	0.8	264.4	264.4	264.7	0.3
R	13,348[2]	42	89	5.7	264.4	264.4	264.4	0.0
S	13,876[2]	29	73	6.9	269.9	269.9	270.1	0.2
T	14,095[2]	37	89	5.6	278.6	278.6	278.7	0.1
U	14,181[2]	113	637	0.8	279.2	279.2	279.3	0.1
V	14,776[2]	13	49	10.4	296.9	296.9	297.0	0.1

[1]Feet above county boundary
[2]Feet above confluence with Muscoot Reservoir

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY
(ALL JURISDICTIONS)

FLOODWAY DATA

BRONX RIVER – BROWN BROOK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Brown Brook (continued)								
W	15,308[1]	27	60	8.4	311.0	311.0	311.0	0.0
X	15,701[1]	30	79	6.4	316.8	316.8	317.2	0.4
Y	15,722[1]	34	117	4.3	319.4	319.4	319.5	0.1
Z	16,716[1]	21	58	8.7	333.0	333.0	333.6	0.6
AA	17,063[1]	22	60	8.3	340.5	340.5	341.1	0.6
AB	17,568[1]	13	66	7.7	347.3	347.3	347.6	0.3
AC	18,149[1]	84	338	1.1	352.5	352.5	353.5	1.0
AD	19,146[1]	196	445	0.8	352.6	352.6	353.6	1.0
AE	19,455[1]	69	91	4.0	353.8	353.8	354.5	0.7
AF	19,522[1]	18	47	6.7	355.7	355.7	356.2	0.5
AG	19,572[1]	30	120	2.6	358.0	358.0	358.8	0.8
AH	19,948[1]	15	34	9.2	369.9	369.9	369.9	0.0
AI	20,360[1]	21	40	7.8	381.5	381.5	381.5	0.0
AJ	20,949[1]	24	45	6.9	421.6	421.6	421.8	0.2
AK	21,509[1]	60	205	1.5	424.3	424.3	425.0	0.7
Byram River Reach 1								
A	102[2]	318[3]	6,518	0.8	11.9	11.9	12.7	0.8
B	1,306[2]	227[3]	4,719	1.2	11.9	11.9	12.7	0.8
C	2,330[2]	232[3]	4,778	1.1	12.0	12.0	12.8	0.8
D	2,537[2]	253[3]	5,227	1.0	12.0	12.0	12.8	0.8
E	3,407[2]	135[3]	2,491	2.2	12.0	12.0	12.8	0.8
F	4,450[2]	282[3]	4,770	1.1	12.1	12.1	12.9	0.8
G	5,570[2]	120[3]	2,253	2.4	12.1	12.1	12.9	0.8
H	6,032[2]	142[3]	2,371	2.3	12.1	12.1	12.9	0.8
I	6,203[2]	188[3]	2,163	2.5	12.2	12.2	13.1	0.9

[1]Feet above confluence with Muscoot Reservoir
[2]Feet above confluence with Long Island Sound
[3]Width extends beyond county boundary

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY
(ALL JURISDICTIONS)

FLOODWAY DATA

BROWN BROOK – BYRAM RIVER REACH 1

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Byram River Reach 1 (continued)								
J	6,652[1]	64[3]	997	5.2	12.8	12.8	13.5	0.7
K	7,456[1]	91	1,433	3.6	13.5	13.5	14.3	0.8
L	8,654[1]	109	1,529	3.4	14.0	14.0	15.0	1.0
M	9,191[1]	224	2,184	2.4	14.2	14.2	15.2	1.0
N	9,625[1]	50	790	6.6	17.5	17.5	18.1	0.6
Byram River Reach 2								
A	1,851[2]	280	1,729	1.5	369.0	369.0	369.0	0.5
B	4,498[2]	130	489	1.7	369.7	369.7	370.4	0.7
C	6,358[2]	80	217	3.9	371.2	371.2	371.5	0.3
D	8,130[2]	143	541	1.4	377.8	377.8	377.9	0.1
E	8,840[2]	80	427	2.1	378.0	378.0	378.2	0.2
F	10,706[2]	81	409	2.2	381.4	381.4	381.7	0.3
G	13,390[2]	181	234	2.8	383.8	383.8	384.2	0.4
H	16,675[2]	45	199	3.3	396.8	396.8	397.0	0.2
I	18,325[2]	46	106	2.7	406.7	406.7	406.8	0.1
Caney Brook								
A	0[2]	38	81	4.8	218.6	218.6	218.6	0.0
B	994[2]	30	72	5.4	225.3	225.3	225.3	0.0
C	1,590[2]	16	45	8.6	231.4	231.4	231.4	0.0
D	2,284[2]	26	58	6.8	241.0	241.0	241.0	0.0
E	3,132[2]	22	49	8.0	257.1	257.1	257.1	0.0
F	3,792[2]	11	37	10.6	268.9	268.9	269.4	0.5
G	4,067[2]	35	82	6.7	272.0	272.0	272.1	0.1
H	4,817[2]	83	273	2.0	275.7	275.7	276.7	1.0

[1]Feet above confluence with Long Island Sound
[2]Feet above county boundary
[3]Width extends beyond county boundary

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY
(ALL JURISDICTIONS)

FLOODWAY DATA

BYRAM RIVER REACH 1 – BYRAM RIVER REACH 2 - CANEY BROOK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Caney Brook (continued)								
I	5,219[1]	82	333	1.7	279.6	279.6	280.3	0.7
J	5,510[1]	54	228	2.4	280.3	280.3	281.1	0.8
K	5,771[1]	26	123	4.5	284.7	284.7	284.7	0.0
L	6,107[1]	25	62	8.9	288.3	288.3	288.3	0.0
M	6,214[1]	73	292	1.9	293.0	293.0	293.4	0.4
N	6,888[1]	18	58	9.5	304.7	304.7	305.2	0.5
O	7,275[1]	19	65	8.5	311.5	311.5	311.7	0.2
P	7,737[1]	17	56	9.8	321.9	321.9	321.9	0.0
Q	8,072[1]	62	202	2.7	325.1	325.1	325.6	0.5
Clove Brook								
A	185[1]	64	348	2.7	244.5	244.5	245.5	1.0
B	475[1]	70	352	2.7	249.3	249.3	250.2	0.9
C	530[1]	65	292	3.2	249.3	249.3	250.2	0.9
D	845[1]	21	97	9.7	253.2	253.2	254.0	0.8
E	1,091[1]	17	79	12.0	259.4	259.4	259.4	0.0
F	1,298[1]	30	133	7.1	262.1	262.1	263.1	1.0
Crook Brook								
A	40[2]	43	230	4.1	329.7	326.6[3]	327.6	1.0
B	1,790[2]	54	222	4.2	332.8	332.8	333.8	1.0
C	4,100[2]	48	224	4.2	342.2	342.2	343.1	0.9
D	5,470[2]	17	67	9.5	368.3	368.3	369.1	0.8
E	5,980[2]	20	71	9.0	379.2	379.2	379.2	0.0
F	6,225[2]	24	104	6.1	386.0	386.0	386.0	0.0
G	7,575[2]	28	75	8.5	418.4	418.4	418.5	0.1
H	8,820[2]	20	76	8.4	450.6	450.6	450.6	0.0

[1]Feet above Limit of Detailed Study
[2]Feet above confluence with Titicus River
[3]Elevation computed without consideration of backwater effects from Titicus River

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY
(ALL JURISDICTIONS)

FLOODWAY DATA

CANEY BROOK – CLOVE BROOK – CROOK BROOK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Croton River								
A	2,138[1]	517	4,356	7.0	6.6	4.5[3]	5.5	1.0
B	2,811[1]	269	2,549	12.0	6.6	6.5[3]	6.9	0.4
C	3,286[1]	756	7,791	3.9	9.1	9.1	9.4	0.3
D	7,354[1]	182	2,618	11.7	10.6	10.6	11.5	0.9
E	7,779[1]	128	2,068	14.8	11.6	11.6	12.0	0.4
F	8,170[1]	170	2,831	10.8	14.2	14.2	14.7	0.7
G	8,386[1]	122	2,178	14.0	14.3	14.3	14.9	0.4
H	8,939[1]	243	2,205	13.9	16.6	16.6	17.0	0.4
I	9,207[1]	211	1,935	15.8	20.2	20.2	21.1	0.9
J	9,410[1]	147	1,627	18.8	25.6	25.6	25.9	0.3
K	9,951[1]	123	1,600	19.1	30.4	30.4	30.8	0.4
L	10,585[1]	118	2,369	12.9	37.8	37.8	38.3	0.5
M	11,311[1]	128	2,814	10.9	39.9	39.9	40.6	0.7
N	12,042[1]	70	1,305	23.3	39.0	39.0	39.0	0.0
O	12,836[1]	116	2,714	11.2	51.0	51.0	51.0	0.0
P	13,342[1]	335	7,390	4.1	51.9	51.9	52.6	0.7
Q	14,614[1]	200	3,779	8.0	52.2	52.2	53.2	1.0
R	15,098[1]	125	2,603	11.7	52.4	52.4	53.4	1.0
David's Brook								
A	2,636[2]	69	147	3.5	333.4	333.4	334.4	1.0
B	3,268[2]	34	201	2.5	334.1	334.1	335.1	1.0
C	3,365[2]	119	612	1.1	336.6	336.6	337.5	0.9
D	4,690[2]	312	2618	0.2	336.6	336.6	337.5	0.9
E	5,980[2]	252	1974	0.2	336.7	336.7	337.6	0.9
F	9,100[2]	78	412	0.5	336.7	336.7	337.6	0.9

[1]Feet above confluence with Hudson River
[2]Feet above confluence with Stone Hill River
[3]Elevation computed without consideration of backwater effects from Hudson River

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY (ALL JURISDICTIONS)

FLOODWAY DATA

CROTON RIVER – DAVID'S BROOK

TABLE 7

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
East Branch Blind Brook								
A	58[1]	41	144	5.0	35.2	30.2[3]	30.6	0.5
B	523[1]	81	222	3.2	37.9	37.9	37.9	0.0
C	1,169[1]	94	297	2.4	41.0	41.0	41.8	0.8
D	2,161[1]	41	160	4.5	63.7	63.7	64.5	0.7
E	2,601[1]	86	945	0.7	87.3	87.3	87.4	0.1
F	3,249[1]	42	81	8.0	94.8	94.8	94.7	0.0
G	3,686[1]	39	207	2.9	110.6	110.6	111.1	0.5
H	4,220[1]	57	65	5.6	116.7	116.7	116.9	0.2
I	5,637[1]	19	85	7.0	125.8	125.8	126.6	0.8
J	6,229[1]	76	277	2.1	131.3	131.3	131.7	0.4
K	7,107[1]	124	725	0.8	131.5	131.5	132.0	0.5
L	8,366[1]	30	116	5.0	131.5	131.5	131.9	0.4
M	8,706[1]	18	79	2.4	134.2	134.2	134.8	0.6
N	9,060[1]	20	47	4.1	143.4	143.4	143.9	0.5
East Branch Mamaroneck River								
A	61[2]	25	118	9.8	134.4	134.4	134.8	0.4
B	606[2]	33	124	9.3	144.7	144.7	144.7	0.0
C	1,297[2]	21	80	3.9	161.0	161.0	161.0	0.0
D	1,821[2]	35	173	6.7	162.5	162.5	162.5	0.0
E	2,713[2]	65	188	6.1	173.1	173.1	173.1	0.0
F	4,063[2]	50	190	6.1	188.0	188.0	188.8	0.8
G	5,238[2]	32	156	6.4	205.0	205.0	206.0	1.0
H	5,675[2]	29	193	5.2	207.5	207.5	208.0	0.5
I	10,229[2]	90	211	1.9	213.1	213.1	213.9	0.8

[1]Feet above confluence with Blind Brook
[2]Feet above limit of detailed study
[3]Elevation computed without consideration of backwater effects from Blind Brook

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY
(ALL JURISDICTIONS)

FLOODWAY DATA

EAST BRANCH BLIND BROOK – EAST BRANCH MAMARONECK RIVER

TABLE 7

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
East Branch Mamaroneck River (continued)								
J	10,950[1]	45	151	1.9	218.9	218.9	219.1	0.2
K	11,449[1]	42	182	1.6	235.9	235.9	236.1	1.0
L	12,594[1]	76	273	0.9	236.5	236.5	237.4	0.9
M	12,837[1]	90	1,018	0.5	245.9	245.9	245.9	0.0
N	13,468[1]	265	1,575	0.3	246.0	246.0	246.0	0.0
O	15,262[1]	56	85	5.7	246.9	246.9	246.9	0.0
P	15,387[1]	55	241	2.0	251.6	251.6	252.0	0.4
East Branch Sheldrake River								
A	267[2]	19	78	9.9	59.0	59.0	59.2	0.2
B	851[2]	58	359	2.2	69.5	69.5	70.5	0.9
C	1,655[2]	28	158	4.9	71.1	71.1	71.5	0.3
D	2,298[2]	90	302	2.6	75.2	75.2	75.2	0.0
E	2,742[2]	23	104	7.5	75.8	75.8	76.1	0.3
F	3,089[2]	23	76	10.2	84.9	84.9	84.9	0.0
G	3,303[2]	34	108	7.2	89.6	89.6	89.6	0.0
H	4,031[2]	50	262	3.0	93.4	93.4	94.3	0.9
I	4,690[2]	85	320	2.4	94.7	94.7	95.6	0.9
J	5,571[2]	55	205	3.8	98.0	98.0	98.5	0.5
Fly Kill Brook								
A	342[3]	13	169	3.4	240.4	240.4	240.8	0.4
B	624[3]	37	191	3.0	242.6	242.6	243.6	1.0
C	1,300[3]	27	165	3.5	247.0	247.0	247.6	0.6
D	1,485[3]	55	415	1.4	247.9	247.9	248.4	1.0
E	1,579[3]	*	*	*	248.5	*	*	*

[1]Feet above limit of detailed study
[2]Feet above confluence with Sheldrake River
[3]Feet above confluence with Saw Mill River

*Data not calculated

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY
(ALL JURISDICTIONS)

FLOODWAY DATA

EAST BRANCH MAMARONECK RIVER – EAST BRANCH SHELDRAKE RIVER – FLY KILL BROOK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Fly Kill Brook (continued)								
F	1,713[1]	*	*	*	249.0	*	*	*
G	1,925[1]	*	*	*	249.2	*	*	*
H	2,114[1]	*	*	*	249.4	*	*	*
I	2,215[1]	*	*	*	249.5	*	*	*
J	2,430[1]	*	*	*	249.6	*	*	*
K	2,817[1]	*	*	*	251.9	*	*	*
L	3,024[1]	*	*	*	252.3	*	*	*
M	3,296[1]	*	*	*	253.4	*	*	*
N	3,418[1]	*	*	*	253.4	*	*	*
O	3,647[1]	*	*	*	253.4	*	*	*
P	4,037[1]	*	*	*	253.5	*	*	*
Q	4,452[1]	*	*	*	253.5	*	*	*
R	4,842[1]	*	*	*	253.5	*	*	*
S	5,083[1]	*	*	*	253.5	*	*	*
Furnace Brook								
A	457[2]	112	520	2.2	6.9	4.4[3]	5.1	0.7
B	1,334[2]	24	98	11.5	15.5	15.5	15.7	0.2
C	2,305[2]	55	234	4.8	34.4	34.4	35.2	0.8
D	2,704[2]	71	637	1.8	63.0	63.0	63.0	0.0
E	3,594[2]	166	557	2.0	63.3	63.3	63.3	0.0
F	4,565[2]	71	449	2.5	66.4	66.4	66.4	0.0
G	5,163[2]	20	107	10.5	66.5	66.5	66.7	0.2
H	5,489[2]	43	385	2.6	77.7	77.7	77.7	0.0
I	6,545[2]	36	104	9.7	81.5	81.5	81.5	0.0
J	7,579[2]	36	104	9.7	122.3	122.3	122.7	0.4

[1]Feet above confluence with Saw Mill River
[2]Feet above confluence with Hudson River
[3]Elevation computed without consideration of backwater effects from Hudson River

*Data not calculated

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY (ALL JURISDICTIONS)

FLOODWAY DATA

FLY KILL BROOK – FURNACE BROOK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Furnace Brook (continued)								
K	8,749	451	1,678	0.4	144.3	144.3	144.3	0.0
L	9,710	163	373	2.0	144.4	144.4	144.4	0.0
M	10,861	65	105	7.1	180.5	180.5	180.5	0.0
N	11,783	24	82	8.2	195.4	195.4	195.8	0.4
O	12,769	35	119	5.7	198.7	198.7	199.1	0.4
P	13,661	44	101	6.7	201.4	201.4	201.9	0.5
Q	14,374	29	79	8.6	212.0	212.0	212.2	0.2
R	15,096	99	319	2.1	223.5	223.5	224.5	1.0
S	15,557	35	147	4.6	223.9	223.9	224.8	0.9
T	16,087	50	233	2.9	228.3	228.3	229.3	1.0
U	16,400	40	204	3.3	229.1	229.1	229.7	0.6
V	17,146	70	316	2.1	236.7	236.7	237.3	0.6
W	18,032	221	496	1.4	248.5	248.5	248.5	0.0
X	19,122	219	631	1.1	249.3	249.3	249.5	0.2
Y	19,960	95	230	2.9	251.0	251.0	251.3	0.3
Z	20,602	95	125	4.1	251.4	251.4	252.4	1.0
AA	21,812	76	371	1.4	254.2	254.2	254.7	0.5
AB	22,838	52	461	1.1	264.6	264.6	266.5	1.0
AC	23,701	116	867	0.6	264.7	264.7	266.5	1.0
AD	24,756	116	759	0.7	264.7	264.7	266.5	1.0
AE	25,879	22	56	9.1	267.0	267.0	267.1	0.1
AF	26,562	40	183	2.8	281.3	281.3	282.3	1.0
AG	27,282	85	261	1.9	282.1	282.1	283.0	0.9
AH	27,806	34	70	7.3	283.7	283.7	283.9	0.2
AI	28,346	50	296	1.7	296.6	296.6	297.4	0.8
AJ	29,304	39	119	4.3	303.4	303.4	304.3	0.9

[1]Feet above confluence with Hudson River

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY (ALL JURISDICTIONS)

FLOODWAY DATA

FURNACE BROOK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Gedney Brook								
A	3,365[1]	23	64	8.3	265.6	265.6	265.6	0.0
B	4,495[1]	21	56	9.5	288.5	288.5	288.5	0.0
C	4,825[1]	30	65	8.2	291.9	291.9	292.0	0.1
D	5,400[1]	31	64	8.3	306.4	306.4	306.4	0.0
E	5,868[1]	20	45	8.6	312.8	312.8	312.8	0.0
F	6,390[1]	23	47	8.2	321.3	321.3	321.3	0.0
G	6,870[1]	43	195	2.0	332.0	332.0	332.3	0.3
H	8,135[1]	26	49	7.8	347.3	347.3	347.3	0.0
I	9,085[1]	19	44	8.6	379.8	379.8	379.8	0.0
J	10,500[1]	47	57	6.2	403.6	403.6	403.6	0.0
K	10,636[1]	23	60	5.9	406.8	406.8	406.8	0.0
Grassy Sprain Brook								
A	244[2]	75	404	3.8	83.7	79.8[3]	80.0	0.2
Hallocks Mill Brook								
A	169[1]	49	264	5.3	366.9	366.9	367.8	0.9
B	595[1]	31	198	7.1	369.6	369.6	369.6	0.0
C	1,455[1]	90	534	2.6	373.5	373.5	373.7	0.2
D	2,425[1]	52	161	8.7	375.6	375.6	375.9	0.3
E	3,673[1]	143	220	5.5	383.6	383.6	383.6	0.0
F	4,654[1]	387	980	1.2	388.5	388.5	389.2	0.7
G	5,556[1]	38	126	9.6	392.9	392.9	393.1	0.2
H	6,390[1]	55	488	2.5	405.3	405.3	405.3	0.0
I	6,708[1]	43	329	3.7	409.6	409.6	409.6	0.0
J	6,825[1]	108	731	1.7	417.3	417.3	417.3	0.0

[1]Feet above New Croton Reservoir
[2]Feet above confluence with Bronx River
[3]Elevation computed without consideration of backwater effects from Bronx River

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY
(ALL JURISDICTIONS)

FLOODWAY DATA

GEDNEY BROOK – GRASSY SPRAIN BROOK – HALLOCKS MILL BROOK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Hallocks Mill Brook (continued)								
K	7,979[1]	28	198	6.1	419.0	419.0	419.2	0.2
L	9,048[1]	130	606	2.0	420.8	420.8	421.4	0.6
M	10,661[1]	172	2,041	0.3	434.1	434.1	434.1	0.0
N	12,406[1]	37	81	7.3	436.1	436.1	436.2	0.1
O	14,114[1]	205	2,514	0.2	461.6	461.6	461.6	0.0
P	16,000[1]	125	1,380	0.4	461.6	461.6	461.6	0.0
Hallocks Mill Brook Tributary 1								
A	1,331[2]	17	43	6.3	392.2	392.2	392.7	0.5
B	1,574[2]	13	37	7.3	395.1	395.1	395.1	0.0
C	1,688[2]	150	781	0.3	401.1	401.1	401.2	0.1
D	2,420[2]	21	51	5.2	401.4	401.4	401.4	0.0
E	3,041[2]	14	42	6.4	407.2	407.2	407.2	0.0
F	3,911[2]	15	44	6.1	415.8	415.8	416.6	0.8
G	5,150[2]	20	45	5.9	434.1	434.1	434.1	0.0
H	5,453[2]	78	261	1.0	438.2	438.2	438.3	0.1
Hallocks Mill Brook Tributary 2								
A	1,487[2]	111	295	2.2	424.6	424.6	425.3	0.7
B	3,725[2]	48	154	4.2	444.4	444.4	445.2	0.8
C	4,819[2]	82	344	1.9	462.7	462.7	463.1	0.4
D	5,319[2]	31	75	8.6	469.3	469.3	469.9	0.6

[1]Feet above limit of detailed study
[2]Feet above confluence with Hallocks Mill Brook

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY (ALL JURISDICTIONS)

FLOODWAY DATA

HALLOCKS MILL BROOK – HALLOCKS MILL BROOK TRIBUTARY 1 – HALLOCKS MILL BROOK TRIBUTARY 2

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Highland Avenue Brook								
A	367[1]	101	472	0.9	127.8	127.8	127.9	0.1
B	847[1]	23	58	7.6	128.1	128.1	128.3	0.2
C	1,341[1]	14	44	10.1	156.2	156.2	156.3	0.1
Hillside Avenue Brook								
A	464[2]	55	93	3.2	131.5	127.3[4]	128.2	0.9
B	1,241[2]	47	69	4.2	135.9	135.9	136.3	0.4
C	1,367[2]	115	358	0.8	136.5	136.5	136.9	0.4
D	2,025[2]	45	49	6.0	150.3	150.3	150.2	0.0
E	2,504[2]	25	40	7.3	176.7	176.7	176.7	0.0
F	2,725[2]	19	39	7.5	202.3	202.3	202.3	0.0
Hutchinson River								
A	5,028[3]	65	355	6.0	13.4	7.4[5]	7.5	0.1
B	5,500[3]	65	476	4.5	13.4	11.3[5]	11.4	0.1
C	6,681[3]	104	573	4.8	13.4	13.4	13.2	0.2
D	7,193[3]	159	852	1.7	14.7	14.7	14.9	0.2
E	7,985[3]	49	302	4.7	15.1	15.1	15.6	0.5
F	8,228[3]	46	290	4.9	18.4	18.4	18.6	0.2
G	8,812[3]	59	508	1.5	21.3	21.3	21.4	0.1
H	9,179[3]	33	332	2.3	22.7	22.7	22.8	0.1
I	9,632[3]	130	957	0.8	24.5	24.5	24.5	0.0
J	10,373[3]	118	475	1.6	24.5	24.5	24.5	0.0
K	10,752[3]	32	204	3.7	28.5	28.5	28.6	0.1
L	11,196[3]	86	477	1.6	29.3	29.3	30.0	0.7
M	11,995[3]	68	317	2.4	29.9	29.9	30.8	0.9

[1] Feet above confluence with Hutchinson River
[2] Feet above confluence with East Branch Blind Brook
[3] Feet above county boundary
[4] Elevation computed without consideration of backwater effects from East Branch Blind Brook
[5] Elevation computed without consideration of backwater effects from Long Island Sound

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY (ALL JURISDICTIONS)

FLOODWAY DATA

HIGHLAND AVENUE BROOK – HILLSIDE AVENUE BROOK – HUTCHINSON RIVER

TABLE 7

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Hutchinson River (continued)								
N	8,351	50	207	3.7	37.0	37.0	37.4	0.4
O	9,028	28	122	5.0	42.2	42.2	42.2	0.0
P	10,278	37	163	4.7	57.6	57.6	58.2	0.6
Q	10,602	50	279	2.7	61.3	61.3	61.4	0.1
R	11,245	46	306	1.5	62.8	62.8	63.3	0.5
S	11,936	682	3,561	0.1	63.5	63.5	63.8	0.3
T	13,988	1,017	3,895	0.2	63.5	63.5	63.9	0.4
U	15,728	25	77	9.9	64.9	64.9	64.9	0.0
V	16,338	21	86	8.9	69.0	69.0	69.6	0.6
W	16,809	37	348	1.8	101.1	101.1	101.1	0.0
X	19,187	155	820	1.5	101.2	101.2	101.2	0.0
Y	20,004	53	267	4.1	103.8	103.8	103.8	0.0
Z	20,494	312	1,861	0.6	124.2	124.2	124.2	0.0
AA	22,496	111	267	4.1	124.3	124.3	124.3	0.0
AB	23,380	76	144	6.9	128.7	128.7	129.0	0.3
AC	24,254	55	235	4.2	137.5	137.5	137.6	0.1
AD	24,476	36	275	3.6	138.9	138.9	138.9	0.0
AE	25,185	68	264	3.8	139.5	139.5	140.1	0.6
AF	25,484	68	235	4.2	142.6	142.6	142.6	0.0
AG	26,039	16	48	9.8	170.8	170.8	171.2	0.4
AH	27,311	895	3,694	0.1	185.6	185.6	185.6	0.0
AI	28,831	180	692	0.7	185.6	185.6	185.6	0.0
AJ	29,027	65	327	1.4	186.5	186.5	186.9	0.4
AK	29,733	62	216	6.0	187.9	187.9	188.3	0.4
AL	30,585	116	641	2.0	202.5	202.5	203.2	0.7
AM	31,120	53	144	9.0	203.1	203.1	203.3	0.2
AN	31,402	60	198	4.2	208.0	208.0	208.1	0.1

[1]Feet above limit of detailed study

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY
(ALL JURISDICTIONS)

FLOODWAY DATA

HUTCHINSON RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Hutchinson River (continued)								
AO	31,524[1]	43	193	4.3	209.2	209.2	209.2	0.0
AP	31,654[1]	49	226	3.7	209.4	209.4	209.5	0.1
AQ	32,102[1]	85	442	1.9	209.7	209.7	209.9	0.2
AR	33,060[1]	45	99	8.5	211.3	211.3	211.3	0.0
AS	33,44[1]	50	340	2.5	215.4	215.4	216.1	0.7
AT	34,540[1]	118	736	1.1	215.6	215.6	216.3	0.7
AU	35,211[1]	111	556	1.5	215.7	215.7	216.3	0.6
AV	35,711[1]	102	508	1.7	216.0	216.0	216.7	0.7
AW	36,625[1]	88	332	2.5	216.3	216.3	217.2	0.9
AX	37,384[1]	116	335	2.5	216.7	216.7	217.5	0.8
AY	38,048[1]	31	103	8.1	222.9	222.9	223.5	0.6
Kensico Road Tributary								
A	0[2]	29	74	9.1	249.7	248.5[4]	248.5	0.0
B	2,835[2]	63	214	3.1	344.1	344.1	344.1	0.0
C	3,322[2]	30	145	4.6	351.3	351.3	351.7	0.4
Kil Brook								
A	396[3]	14	62	11.7	195.4	195.4	195.4	0.0
B	673[3]	12	98	7.4	204.5	204.5	204.5	0.0
C	1,130[3]	19	112	6.5	220.6	220.6	220.6	0.0
D	1,314[3]	19	101	7.2	228.7	228.7	228.7	0.0
E	1,816[3]	17	75	9.7	241.7	241.7	242.6	0.9
F	2,026[3]	19	205	3.5	256.6	256.6	257.0	0.4
G	2,681[3]	14	61	11.9	268.0	268.0	268.0	0.0
H	2,838[3]	19	114	6.3	274.7	274.7	274.7	0.0
I	3,060[3]	28	138	5.3	278.4	278.4	278.4	0.0

[1]Feet above limit of detailed study
[2]Feet above confluence with Nanny Hagen Brook
[3]Feet above confluence with Sing Sing Creek
[4]Elevation computed without consideration of backwater effects from Nanny Hagen Brook

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY
(ALL JURISDICTIONS)

FLOODWAY DATA

HUTCHINSON RIVER – KENSICO ROAD TRIBUTARY – KIL BROOK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Kil Brook (continued)								
J	3,505[1]	22	75	9.7	294.4	294.4	294.5	0.1
K	3,910[1]	21	79	3.8	302.5	302.5	303.1	0.6
L	4,299[1]	10	30	10.1	318.3	318.3	318.3	0.0
M	4,705[1]	9	28	10.6	329.8	329.8	329.8	0.0
N	5,242[1]	15	35	8.6	347.3	347.3	347.7	0.4
O	5,635[1]	26	45	6.7	360.3	360.3	360.3	0.0
P	5,899[1]	46	54	5.6	368.6	368.6	369.2	0.6
Q	6,285[1]	10	30	10.0	384.6	384.6	384.6	0.0
R	6,099[1]	12	32	9.3	400.2	400.2	400.6	0.4
S	6,931[1]	9	29	10.3	414.1	414.1	414.1	0.0
T	7,364[1]	13	33	9.0	435.3	435.3	435.6	0.3
U	7,903[1]	13	37	8.1	452.7	452.7	453.2	0.5
V	8,435[1]	14	43	6.9	463.3	463.3	464.2	0.9
W	8,995[1]	17	72	4.2	468.3	468.3	469.0	0.7
X	9,403[1]	11	31	9.6	474.1	474.1	474.1	0.0
Y	9,794[1]	41	163	1.8	479.9	479.9	480.9	1.0
Kisco River								
A	2,590[2]	300	1,294	1.8	205.4	194.2[3]	194.2	0.0
B	3,800[2]	90	267	8.9	205.4	199.2[3]	199.2	0.0
C	5,360[2]	80	373	6.4	211.6	211.6	211.8	0.2
D	5,920[2]	294	990	2.4	215.8	215.8	216.3	0.5
E	8,550[2]	39	236	10.8	224.4	224.4	225.4	1.0
F	11,920[2]	41	201	11.8	256.4	256.4	256.6	0.2
G	14,050[2]	118	398	6.0	270.0	270.0	270.2	0.2
H	15,160[2]	49	248	9.6	275.1	275.1	275.7	0.6
I	15,730[2]	93	686	3.5	279.5	279.5	279.5	0.0

[1]Feet above confluence with Sing Sing Creek
[2]Feet above confluence with New Croton Reservoir
[3]Elevation computed without consideration of backwater effects from New Croton Reservoir

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY
(ALL JURISDICTIONS)

FLOODWAY DATA

KIL BROOK – KISCO RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Kisco River (continued)								
J	16,750[1]	232	1,710	1.4	279.9	279.9	280.1	0.2
K	18,320[1]	305	2163	1.1	281.3	281.3	281.7	0.4
L	20,415[1]	152	1,403	1.1	281.5	281.5	281.9	0.4
M	21,400[1]	222	1,764	0.7	281.5	281.5	282.0	0.5
N	23,275[1]	270	1,045	1.1	286.0	286.0	286.2	0.2
O	24,330[1]	167	902	1.3	293.0	293.0	293.0	0.0
P	25,470[1]	42	126	9.4	297.2	297.2	297.3	0.1
Q	26,370[1]	34	195	6.1	324.5	324.5	324.5	0.0
R	27,050[1]	37	187	6.3	334.4	334.4	335.3	0.9
S	27,340[1]	45	350	3.4	343.2	343.2	343.2	0.0
Kisco River Tributary 1								
A	1,050[2]	135	106	6.2	281.5	281.5	281.8	0.3
B	2,185[2]	155	832	0.8	281.8	281.8	282.7	0.9
C	3,465[2]	235	978	0.7	283.8	283.8	283.9	0.1
Knollwood Brook								
A	9,290[3]	74	473	1.4	213.4	213.4	214.2	0.8
B	10,190[3]	37	112	6.0	218.0	218.0	218.1	0.1
C	10,450[3]	16	61	11.1	222.8	222.8	222.8	0.0
D	10,586[3]	88	423	1.6	229.4	229.4	230.2	0.8
E	10,960[3]	33	97	6.9	240.8	240.8	240.9	0.1
F	11,470[3]	18	78	8.6	251.5	251.5	251.5	0.0
Lecount Creek								
A	423[4]	11	80	3.4	33.3	33.3	34.0	0.7
B	1,057[4]	19	78	3.5	39.5	39.5	40.2	0.7
C	1,500[4]	13	31	8.8	44.5	44.5	44.5	0.0

[1]Feet above confluence with New Croton Reservoir
[2]Feet above confluence with Kisco River
[3]Feet above Bronx River
[4]Feet above Lower Mamaroneck River

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY
(ALL JURISDICTIONS)

FLOODWAY DATA

KISCO RIVER – KISCO RIVER TRIBUTARY 1 – KNOLLWOOD BROOK – LECOUNT CREEK

TABLE 7

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Leroy Avenue Brook								
A	0[1]	9	23	9.2	87.0	87.0	87.0	0.0
B	462[1]	96	136	1.6	121.0	121.0	121.0	0.0
C	1,022[1]	11	125	1.7	148.3	148.3	148.9	0.6
D	1,571[1]	21	106	2.0	168.5	168.5	169.4	0.8
E	1,939[1]	17	65	3.3	184.1	184.1	184.4	0.3
F	2,382[1]	15	28	7.8	214.7	214.7	215.0	0.2
G	2,557[1]	21	37	5.8	225.1	225.1	225.3	0.1
Mamaroneck River Lower Reach								
A	657[2]	111	1,722	2.8	11.5	9.4[3]	9.9	0.5
B	1,099[2]	72	592	8.1	11.5	8.9[3]	9.4	0.5
C	1,319[2]	115	631	7.6	11.5	9.7[3]	10.1	0.4
D	1,493[2]	175	1,071	4.5	16.7	16.7	16.7	0.0
E	2,276[2]	48	368	13.1	16.9	16.9	17.0	0.1
F	2,380[2]	97	820	5.9	20.3	20.3	20.3	0.0
G	2,840[2]	67	475	10.1	20.5	20.5	20.5	0.0
H	2,917[2]	90	806	6.0	22.2	22.2	22.3	0.1
I	3,089[2]	82	671	7.0	22.3	22.3	22.4	0.1
J	10,836[2]	265	946	4.0	33.1	33.1	34.0	0.9
K	11,202[2]	96	550	6.9	34.8	34.8	35.1	0.3
L	11,395[2]	108	803	4.7	38.1	38.1	38.1	0.0
M	11,560[2]	104	1,092	3.5	38.7	38.7	38.7	0.0
N	11,751[2]	53	305	12.5	38.7	38.7	38.7	0.0
O	11,913[2]	190	1,576	2.4	40.8	40.8	40.8	0.0

[1]Feet above limit of detailed study
[2]Feet above confluence with Long Island Sound
[3]Elevation computed without consideration of backwater effects from Long Island Sound

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY
(ALL JURISDICTIONS)

FLOODWAY DATA

LEROY AVENUE BROOK – MAMARONECK RIVER LOWER REACH

TABLE 7

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NGVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Mamaroneck River Upper Reach								
A	101[1]	23	125	7.4	142.5	142.5	143.4	0.9
B	580[1]	60	278	3.3	145.1	145.1	145.7	0.7
C	1,126[1]	128	417	1.3	145.8	145.8	146.6	0.8
D	1,558[1]	107	392	1.4	146.1	146.1	146.9	0.8
E	2,102[1]	86	335	1.6	146.3	146.3	147.3	1.0
F	2,987[1]	25	117	4.7	151.1	151.1	151.7	0.6
G	3,454[1]	26	63	8.6	160.8	160.8	160.8	0.0
H	3,625[1]	20	108	4.1	175.8	175.8	176.6	0.8
I	3,878[1]	103	436	1.0	178.8	178.8	179.8	1.0
Manhattan Park Brook								
A	540[2]	*	*	*	184.7	*	*	*
B	738[2]	*	*	*	184.7	*	*	*
C	910[2]	*	*	*	185.5	*	*	*
D	995[2]	*	*	*	185.5	*	*	*
E	1,274[2]	*	*	*	186.7	*	*	*
F	1,440[2]	99	718	1.7	188.3	188.3	189.2	0.9
G	1,608[2]	96	686	1.7	188.3	188.3	189.2	0.9
H	2,008[2]	75	554	2.2	188.5	188.5	189.4	0.9
I	2,380[2]	28	241	5.0	188.5	188.5	189.5	0.0
J	2,610[2]	28	230	5.2	188.8	188.8	189.8	1.0

[1]Feet above limit of detailed study
[2]Feet above confluence with Bronx River
*Data not available

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY (ALL JURISDICTIONS)

FLOODWAY DATA

MAMARONECK RIVER UPPER REACH – MANHATTAN PARK BROOK

TABLE 7

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NGVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Mianus River								
A	4,318[1]	143	261	4.2	334.7	334.7	334.9	0.2
B	5,315[1]	44	239	4.6	338.4	338.4	339.3	0.9
C	5,439[1]	97	861	1.3	348.3	348.3	348.3	0.0
D	9,821[1]	161	546	2.0	349.7	349.7	350.1	0.4
E	9,980[1]	141	838	1.3	350.9	350.9	351.4	0.5
F	14,829[1]	290	1483	0.7	352.1	352.1	352.8	0.7
G	14,955[1]	290	1,254	0.9	352.9	352.9	353.2	0.3
Mill River								
A	1,000[2]	112	141	10.5	343.7	343.7	343.7	0.0
B	2,145[2]	159	224	6.6	359.7	359.7	359.7	0.0
Mohegan Outlet								
A	407[2]	32	100	7.3	200.1	200.1	200.1	0.0
B	858[2]	36	97	7.5	220.6	220.6	220.6	0.0
C	1,210[2]	29	78	9.4	248.7	248.7	248.7	0.0
D	1,737[2]	38	86	8.5	282.1	282.1	282.1	0.0
E	1,950[2]	27	76	9.6	296.4	296.4	294.4	0.0
F	2,185[2]	28	78	9.4	324.7	324.7	324.7	0.0
G	2,694[2]	33	82	8.9	368.4	368.4	368.4	0.3
H	3,184[2]	122	328	2.2	384.1	384.1	384.1	0.0

[1]Feet above Mianus Reservoir
[2]Feet above limit of flooding affecting county

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY
(ALL JURISDICTIONS)

FLOODWAY DATA

MIANUS RIVER – MILL RIVER – MOHEGAN OUTLET

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Mohegan Outlet (continued)								
I	3,784[1]	93	150	4.9	412.1	412.1	412.1	0.0
J	4,507[1]	107	120	6.1	429.8	429.8	429.8	0.0
K	4,678[1]	80	230	2.2	445.9	445.9	446.6	0.7
L	5,541[1]	571	2,762	0.2	446.1	446.1	446.9	0.7
M	6,448[1]	44	74	6.8	446.7	446.7	446.7	0.0
N	6,798[1]	817	4,870	0.1	451.1	451.1	452.0	0.9
O	7,480[1]	363	2,692	0.2	451.1	451.1	452.0	0.9
P	7,826[1]	380	3,029	0.2	451.1	451.1	452.0	0.9
Muscoot River								
A	170[2]	329	3,543	0.6	402.6	402.6	402.6	0.0
B	3,160[2]	81	372	5.9	439.3	439.3	440.3	1.0
C	5,080[2]	120	892	2.5	458.3	458.3	458.3	0.0
D	8,690[2]	231	641	3.4	459.1	459.1	460.1	1.0
E	10,650[2]	158	807	2.2	478.4	478.4	478.4	0.0
F	11,785[2]	24	137	12.8	487.6	487.6	487.9	0.3
G	13,835[2]	125	523	3.4	510.3	510.3	510.3	0.0
H	14,790[2]	153	950	1.8	511.5	511.5	511.6	0.1
Nanny Hagen Brook								
A	162[3]	47	242	5.4	249.1	249.1	249.3	0.2
B	599[3]	35	135	9.9	249.7	249.7	250.7	1.0

[1]Feet above limit of flooding affecting county
[2]Feet above confluence with Amawalk Reservoir
[3]Feet above confluence with Saw Mill River

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY (ALL JURISDICTIONS)

FLOODWAY DATA

MOHEGAN OUTLET – MUSCOOT RIVER – NANNY HAGEN BROOK

TABLE 7

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Nanny Hagen Brook (continued)								
C	839[1]	142	349	3.8	253.5	253.5	254.2	0.8
D	1,085[1]	52	413	2.4	259.4	259.4	259.8	0.4
E	1,309[1]	54	498	2.0	262.1	262.1	262.1	0.0
F	1,795[1]	273	2,113	0.5	262.1	262.1	262.1	0.0
G	2,795[1]	20	87	11.9	267.1	267.1	267.1	0.0
H	3,374[1]	32	104	9.9	273.7	273.7	273.7	0.0
I	3,531[1]	29	118	8.7	275.3	275.3	275.9	0.6
J	3,700[1]	56	191	5.4	277.4	277.4	277.8	0.4
K	4,510[1]	42	128	6.6	293.4	293.4	293.2	0.0
L	4,760[1]	36	185	4.5	298.6	298.6	298.7	0.1
M	5,490[1]	58	123	6.8	309.8	309.8	309.8	0.0
N	5,960[1]	73	111	7.5	318.3	318.3	318.3	0.0
O	6,785[1]	30	90	7.8	335.6	335.6	335.6	0.0
Nelson Creek								
A	454[2]	77	96	1.9	65.2[3]	62.6	62.7	0.1
B	962[2]	33	53	3.4	65.2	65.2	65.7	0.5
C	1,833[2]	46	22	3.1	65.8	65.8	66.0	0.2
D	2,294[2]	46	39	1.8	66.7	66.7	66.9	0.2
E	2,820[2]	43	31	2.2	69.9	69.9	70.3	0.4
F	3,029[2]	34	76	0.9	70.0	70.0	70.4	0.4
G	3,971[2]	45	37	1.8	79.4	79.4	79.4	0.0
H	4,843[2]	12	13	5.5	125.3	125.3	125.5	0.2

[1]Feet above confluence with Saw Mill River
[2]Feet above confluence with Brentwood Brook
[3]Elevation computed without consideration of backwater effects from Brentwood Brook

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY (ALL JURISDICTIONS)

FLOODWAY DATA

NANNY HAGEN BROOK – NELSON CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Peekskill Hollow Brook								
A	500[1]	*	785	3.7	6.6	4.5[4]	5.0	0.5
B	1,985[1]	105	791	3.6	6.6	6.4[4]	6.9	0.5
C	3,000[1]	182	1,251	2.3	6.9	6.9	7.5	0.6
D	5,175[1]	168	1,030	2.8	7.9	7.9	8.6	0.7
E	7,040[1]	30	197	14.6	12.6	12.6	12.7	0.1
F	8,450[1]	103	642	4.4	29.6	29.6	29.7	0.1
G	10,925[1]	50	231	12.3	40.1	40.1	40.1	0.0
H	12,425[1]	70	379	7.5	48.0	48.0	48.3	0.3
I	13,450[1]	114	642	4.4	58.8	58.8	58.8	0.0
J	15,215[1]	60	299	9.5	70.1	70.1	70.7	0.6
K	16,900[1]	46	314	8.5	87.0	87.0	87.7	0.7
L	19,750[1]	30	187	14.2	112.8	112.8	113.0	0.2
M	20,560[1]	48[3]	221	12.0	122.2	122.2	122.3	0.1
Peekskill Hollow Brook Tributary								
A	42[2]	349	921	1.1	61.5	60.1[5]	60.2	0.1
B	1,065[2]	291	2,163	0.5	71.2	71.2	71.8	0.6
C	1,570[2]	93	759	1.3	106.6	106.6	106.7	0.1
D	1,989[2]	42	278	3.6	118.5	118.5	119.4	0.9
E	2,300[2]	30	98	10.2	136.8	136.8	136.8	0.0
F	2,599[2]	54	305	3.3	161.9	161.9	162.8	0.9
G	2,893[2]	34	138	7.3	167.0	167.0	167.7	0.7
H	3,146[2]	225	1,622	0.6	181.7	181.7	181.8	0.1
I	3,794[2]	53	122	8.2	192.6	192.6	192.6	0.0
J	3,989[2]	98	266	3.8	202.8	202.8	203.2	0.4

[1]Feet above confluence with Annsville Creek and Sprout Brook
[2]Feet above Peekskill Hollow Brook
[3]Width extends beyond county boundary
[4]Elevation computed without consideration of backwater effects from Hudson River
[5]Elevation computed without consideration of backwater effects from Peekskill Hollow Brook
*Floodway coincident with channel banks

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY
(ALL JURISDICTIONS)

FLOODWAY DATA

PEEKSKILL HOLLOW BROOK – PEEKSKILL HOLLOW BROOK TRIBUTARY

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Peekskill Hollow Brook Tributary (continued)								
K	4,505[1]	37	139	7.2	208.3	208.3	208.3	0.0
L	4,980[1]	43	120	8.3	231.7	231.7	231.7	0.0
M	5,246[1]	47	206	4.8	237.1	237.1	237.1	0.0
N	5,697[1]	68	197	5.1	241.1	241.1	241.1	0.0
O	6,298[1]	50	148	6.7	254.4	254.4	254.4	0.0
P	6,521[1]	138	527	1.3	276.6	276.6	276.6	0.0
Q	6,905[1]	64	146	4.6	276.9	276.9	276.9	0.0
R	7,417[1]	28	113	6.0	287.7	287.7	287.9	0.2
S	8,220[1]	84	508	1.3	298.3	298.3	298.7	0.4
T	9,088[1]	143	664	1.0	298.5	298.5	298.9	0.4
U	9,617[1]	129	373	1.8	301.4	301.4	301.9	0.5
V	10,489[1]	754	4,994	0.1	303.7	303.7	304.7	1.0
W	11,515[1]	1,813	13,895	0.0	303.7	303.7	304.7	1.0
X	12,139[1]	1,282	10,016	0.0	303.7	303.7	304.7	1.0
Y	13,156[1]	507	3,785	0.1	303.7	303.7	304.7	1.0
Z	14,262[1]	184	686	0.7	303.8	303.8	304.8	1.0
Pitch Swamp Brook								
A	7,360[2]	37	195	1.6	437.0	437.0	438.0	1.0
B	8,200[2]	236	1,131	0.2	437.0	437.0	438.0	1.0
Plum Brook								
A	602[3]	193	1,411	1.5	199.2	199.2	199.7	0.5
B	895[3]	58	331	6.3	199.2	199.2	199.3	0.1
C	1,828[3]	76	270	7.7	202.4	202.4	202.4	0.0
D	1,856[3]	78	446	4.7	204.7	204.7	204.7	0.0

[1]Feet above Peekskill Hollow Brook
[2]Feet above confluence with Stone Hill River
[3]Feet above confluence with Muscoot Reservoir

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY
(ALL JURISDICTIONS)

FLOODWAY DATA

PEEKSKILL HOLLOW BROOK TRIBUTARY – PITCH SWAMP BROOK – PLUM BROOK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Plum Brook (continued)								
E	3,020	115	470	4.4	210.5	210.5	211.5	1.0
F	3,197	101	517	4.0	212.0	212.0	212.5	0.5
G	3,661	606	4,492	0.5	212.2	212.2	212.9	0.7
H	4,589	97	260	7.6	216.6	216.6	216.6	0.0
I	5,366	68	208	9.6	227.6	227.6	227.6	0.0
J	5,825	161	357	5.6	235.0	235.0	235.0	0.0
K	7,357	91	224	8.9	248.5	248.5	248.5	0.0
L	8,125	40	207	9.6	256.8	256.8	257.4	0.6
M	8,510	39	189	10.5	262.2	262.2	262.7	0.5
N	9,172	93	549	3.4	267.4	267.4	268.2	0.8
O	9,270	93	749	2.5	271.0	271.0	271.5	0.5
P	11,191	217	858	2.0	274.3	274.3	275.1	0.8
Q	11,346	217	718	2.3	274.8	274.8	275.4	0.6
R	11,656	220	474	2.5	275.3	275.3	276.3	1.0
S	12,274	75	167	7.0	281.7	281.7	281.8	0.1
T	12,542	44	135	8.6	290.9	290.9	291.6	0.7
U	12,906	58	148	7.8	305.9	305.9	305.9	0.0
V	12,993	45	139	8.4	307.6	307.6	307.6	0.0
W	13,077	58	416	2.8	312.5	312.5	312.5	0.0
X	13,173	44	123	9.5	312.7	312.7	312.7	0.0
Y	13,472	48	131	8.9	319.5	319.5	319.5	0.0
Z	13,786	46	128	9.1	335.6	335.6	335.6	0.0
AA	13,915	73	183	6.4	345.5	345.5	345.5	0.0
AB	14,232	29	107	10.9	358.3	358.3	358.3	0.0
AC	14,658	111	219	5.3	370.5	370.5	371.4	0.9
AD	15,082	150	240	4.8	378.4	378.4	378.6	0.2
AE	15,424	100	208	5.6	383.6	383.6	383.7	0.1

[1]Feet above confluence with Muscoot Reservoir

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY
(ALL JURISDICTIONS)

FLOODWAY DATA

PLUM BROOK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Plum Brook (continued)								
AF	15,856[1]	58	150	7.8	392.7	392.7	393.1	0.4
AG	16,520[1]	51	170	6.9	397.1	397.1	397.5	0.4
AH	18,092[1]	36	91	9.2	407.9	407.9	407.9	0.0
AI	18,642[1]	41	114	7.3	415.4	415.4	415.5	0.1
AJ	19,591[1]	41	102	8.1	437.2	437.2	437.2	0.0
AK	20,028[1]	60	149	5.6	441.6	441.6	441.7	0.1
AL	21,296[1]	80	128	6.5	451.8	451.8	451.9	0.1
AM	21,653[1]	58	143	5.8	455.6	455.6	455.8	0.2
AN	22,304[1]	56	166	5.0	464.5	464.5	464.5	0.0
AO	22,791[1]	60	156	5.3	465.8	465.8	466.3	0.5
AP	22,976[1]	58	168	4.9	467.3	467.3	467.4	0.1
AQ	23,794[1]	217	661	1.3	469.4	469.4	470.4	1.0
AR	24,250[1]	42	111	7.5	471.6	471.6	472.0	0.4
AS	24,753[1]	65	157	5.3	481.7	481.7	482.4	0.7
AT	25,065[1]	47	111	7.5	494.8	494.8	495.6	0.8
Plum Brook Tributary								
A	1,021[2]	22	57	3.5	407.7	407.7	408.6	0.9
B	1,494[2]	15	52	3.9	409.9	409.9	410.9	1.0
C	1,573[2]	15	76	2.6	414.2	414.2	414.9	0.7
D	1,665[2]	10	43	4.6	414.2	414.2	415.0	0.8
E	1,889[2]	15	27	7.5	421.2	421.2	421.7	0.5
F	2,063[2]	12	25	7.9	428.8	428.8	429.6	0.8
G	2,706[2]	13	27	7.5	447.3	447.3	447.7	0.4
H	2,772[2]	21	95	2.1	453.5	453.5	454.4	0.9

[1]Feet above confluence with Muscoot Reservoir
[2]Feet above confluence with Plum Brook

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY
(ALL JURISDICTIONS)

FLOODWAY DATA

PLUM BROOK – PLUM BROOK TRIBUTARY

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Pocantico River Lower Reach								
A	609	517	5,257	0.6	18.0	18.0	18.7	0.7
B	2,231	703	10,861	0.3	18.1	18.1	18.8	0.7
C	3,377	361	5,145	0.6	18.1	18.1	18.8	0.7
D	3,991	51	562	5.0	19.4	19.4	20.2	0.8
E	5,302	79	378	7.4	26.7	26.7	26.7	0.0
F	6,189	43	272	10.4	37.1	37.1	37.5	0.4
G	7,396	37	236	11.9	59.3	59.3	60.1	0.8
H	8,545	106	863	3.3	80.6	80.6	80.8	0.2
I	10,149	87	537	5.2	82.2	82.2	83.0	0.8
J	11,298	62	498	5.0	94.0	94.0	94.5	0.5
K	11,951	42	314	7.9	96.7	96.7	97.6	0.9
L	12,769	128	799	3.1	113.0	113.0	113.0	0.0
M	13,272	23	166	15.1	115.4	115.4	115.4	0.0
N	13,716	127	780	3.2	120.1	120.1	120.8	0.7
O	14,355	44	276	9.1	121.7	121.7	121.8	0.1
P	14,985	42	200	12.5	141.6	141.6	141.6	0.0

[1]Feet above Hudson River

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY
(ALL JURISDICTIONS)

FLOODWAY DATA

POCANTICO RIVER LOWER REACH

TABLE 7

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NGVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Pocantico River Upper Reach								
A	0	175	1,268	1.4	228.7	228.7	228.7	0.0
B	610	165	1,218	1.4	228.8	228.8	228.9	0.1
C	1,360	120	741	2.4	228.9	228.9	229.1	0.2
D	2,785	212	1,171	1.6	231.1	231.1	231.4	0.3
E	3,922	300	2,834	0.7	231.2	231.2	231.8	0.6
F	6,146	283	1,053	1.3	233.9	233.9	234.7	0.8
G	6,981	240	2,037	0.7	234.3	234.3	235.1	0.8
H	7,694	152	1,157	1.0	238.1	238.1	239.1	1.0
I	7,929	110	871	1.3	238.1	238.1	239.1	1.0
J	8,322	79	654	1.8	238.2	238.2	239.2	1.0
K	8,597	53	405	2.9	238.3	238.3	239.3	1.0
L	9,206	72	527	2.4	238.8	238.8	240.1	1.3
M	10,135	93	648	1.8	240.0	240.0	241.0	1.0
N	10,512	55	465	2.5	242.3	242.3	243.3	1.0
O	10,919	37	139	8.3	244.3	244.3	244.5	0.2
P	11,500	36	172	6.7	253.1	253.1	254.0	0.9
Q	11,989	22	167	6.9	261.7	261.7	262.4	0.7
R	12,816	80	218	5.3	271.1	271.1	271.6	0.5
S	13,481	185	1,071	1.1	272.9	272.9	273.7	0.8
T	14,278	324	1,825	0.6	273.0	273.0	273.8	0.8
U	15,145	201	986	1.2	273.2	273.2	274.0	0.8

[1]Feet above limit of detailed study

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY
(ALL JURISDICTIONS)

FLOODWAY DATA

POCANTICO RIVER UPPER REACH

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NGVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Saw Mill Creek								
A	310[1]	121	2,981	0.1	211.4	211.4	212.2	0.8
B	935[1]	23	47	8.0	213.4	213.4	213.4	0.0
C	2,155[1]	27	49	7.7	272.6	272.6	272.6	0.0
D	3,100[1]	34	53	7.1	309.8	309.8	309.8	0.0
E	4,475[1]	30	50	7.6	359.4	359.4	359.4	0.0
F	5,275[1]	186	1,863	0.2	389.0	389.0	389.0	0.0
Saw Mill River								
A	0[2]	31	161	11.9	48.1	48.1	48.1	0.0
B	715[2]	37	161	11.9	57.3	57.3	57.3	0.0
C	1,253[2]	58	258	7.4	63.8	63.8	63.8	0.0
D	2,748[2]	81	362	5.3	82.3	82.3	82.3	0.0
E	3,613[2]	85	446	4.3	87.0	87.0	87.4	0.4
F	4,185[2]	30	216	8.8	92.5	92.5	92.5	0.0
G	4,864[2]	20	146	13.1	94.5	94.5	94.5	0.0
H	5,303[2]	36	376	5.1	100.6	100.6	100.6	0.0
I	6,390[2]	150	762	2.5	101.9	101.9	102.0	0.1
J	7,320[2]	25	299	6.4	102.1	102.1	102.2	0.1
K	7,789[2]	82	719	2.6	104.9	104.9	104.9	0.0
L	8,532[2]	205	1,286	1.5	105.1	105.1	105.4	0.3
M	8,835[2]	31	437	4.4	106.8	106.8	107.1	0.3
N	9,323[2]	136	1,001	1.9	106.8	106.8	107.3	0.5
O	9,735[2]	116	965	2.0	106.9	106.9	107.4	0.5
P	10,278[2]	24	326	5.8	106.9	106.9	107.4	0.5
Q	11,048[2]	41	463	4.1	107.1	107.1	107.7	0.6
R	11,289[2]	40	441	4.3	107.4	107.4	108.0	0.6
S	12,293[2]	21	281	6.8	107.4	107.4	107.9	0.5
T	12,750[2]	55	551	3.4	108.0	108.0	108.6	0.6
U	13,024[2]	140	762	2.5	108.8	108.8	109.2	0.4

[1]Feet above confluence with New Croton Reservoir
[2]Feet above Ann Street in the City of Yonkers

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY
(ALL JURISDICTIONS)

FLOODWAY DATA

SAW MILL CREEK – SAW MILL RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Saw Mill River (continued)								
V	13,791	52	406	4.7	109.3	109.3	109.7	0.4
W	14,419	59	383	5.0	109.8	109.8	110.2	0.4
X	14,913	68	640	3.0	110.4	110.4	110.8	0.4
Y	15,397	55	560	3.4	110.6	110.6	110.9	0.3
Z	16,073	76	995	1.9	110.7	110.7	111.2	0.5
AA	16,602	37	363	5.2	110.7	110.7	111.1	0.4
AB	17,106	45	377	5.0	111.4	111.4	112.1	0.7
AC	17,940	112	1,097	1.7	112.9	112.9	113.6	0.7
AD	18,610	274	1,423	1.3	112.9	112.9	113.7	0.8
AE	18,874	277	1,441	1.3	113.0	113.0	113.8	0.8
AF	19,461	396	1,901	1.0	113.1	113.1	113.9	0.8
AG	20,096	226	1,098	1.7	113.2	113.2	114.0	0.8
AH	20,473	301	1,441	1.3	113.3	113.3	114.1	0.8
AI	20,751	307	1,661	1.1	114.1	114.1	114.7	0.6
AJ	21,198	200	1,623	1.2	114.1	114.1	114.7	0.6
AK	21,819	111	833	2.3	114.1	114.1	114.8	0.7
AL	22,341	58	447	4.2	114.2	114.2	114.9	0.7
AM	23,012	95	536	3.5	115.0	115.0	115.6	0.6
AN	23,422	90	528	3.6	115.6	115.6	116.4	0.8
AO	23,782	290	1,743	1.1	116.6	116.6	117.4	0.8
AP	24,375	202	1,257	1.5	116.9	116.9	117.8	0.9
AQ	25,682	130	993	1.9	117.2	117.2	118.2	1.0
AR	26,166	171	812	2.6	118.6	118.6	118.9	0.3
AS	27,232	163	1,301	1.5	119.8	119.8	120.2	0.4
AT	28,176	128	887	2.1	120.3	120.3	120.9	0.6
AU	28,932	111	867	2.2	120.5	120.5	121.1	0.6

[1]Feet above Ann Street in the City of Yonkers

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY
(ALL JURISDICTIONS)

FLOODWAY DATA

SAW MILL RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Saw Mill River (continued)								
AV	30,040	58	377	5.0	120.9	120.9	121.9	1.0
AW	30,825	31	274	6.9	121.8	121.8	122.7	0.9
AX	31,000	73	444	3.1	122.7	122.7	122.7	0.0
AY	31,473	70	430	3.2	122.9	122.9	122.9	0.0
AZ	31,712	100	767	1.8	123.6	123.6	123.6	0.0
BA	32,235	51	321	4.3	123.6	123.6	123.6	0.0
BB	32,609	74	639	2.2	124.2	124.2	124.2	0.0
BC	33,320	170	1,077	1.3	124.9	124.9	124.9	0.0
BD	33,989	113	358	3.9	125.1	125.1	125.1	0.0
BE	34,319	310	1,860	1.0	127.6	127.6	128.3	0.7
BF	35,672	195	1,253	1.6	127.9	127.9	128.6	0.7
BG	36,111	49	328	6.0	128.6	128.6	128.9	0.3
BH	36,188	101	335	5.9	128.8	128.8	129.0	0.2
BI	36,259	113	539	3.9	129.7	129.7	130.4	0.7
BJ	36,593	34	490	4.4	131.9	131.9	132.6	0.7
BK	36,963	65	753	2.6	132.3	132.3	133.0	0.7
BL	37,417	39	440	4.5	132.3	132.3	133.2	0.9
BM	37,653	30	365	5.4	133.3	133.3	134.2	0.9
BN	37,749	51	530	3.7	134.9	134.9	135.8	0.9
BO	38,219	174	2,095	0.9	135.4	135.4	136.2	0.8
BP	38,543	199	2,193	0.9	135.4	135.4	136.2	0.8
BQ	39,554	212	2,309	0.9	135.4	135.4	136.3	0.9
BR	40,568	340	2,759	0.7	135.5	135.5	136.3	0.8
BS	41,071	22	237	8.3	135.5	135.5	136.3	0.8
BT	41,344	44	467	4.2	136.5	136.5	137.3	0.8
BU	41,641	64	438	4.5	136.8	136.8	137.6	0.8

[1]Feet above Ann Street in the City of Yonkers

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY
(ALL JURISDICTIONS)

FLOODWAY DATA

SAW MILL RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Saw Mill River (continued)								
BV	41,933	44	188	10.5	138.2	138.2	138.2	0.0
BW	42,240	122	274	8.6	149.4	149.4	149.4	0.0
BX	42,475	189	1,003	2.3	155.5	155.5	155.5	0.0
BY	43,448	213	561	4.2	155.8	155.8	155.8	0.0
BZ	44,376	160	428	5.5	156.6	156.6	157.1	0.5
CA	45,984	120	655	3.6	160.4	160.4	160.9	0.5
CB	46,764	80	359	6.5	162.1	162.1	162.5	0.4
CC	47,541	125	1,124	2.3	167.5	167.5	167.5	0.0
CD	48,735	90	860	3.1	168.3	168.3	168.3	0.0
CE	49,596	40	412	6.4	168.6	168.6	168.9	0.3
CF	50,353	65	495	5.3	169.5	169.5	170.2	0.7
CG	50,855	67	639	4.1	171.6	171.6	172.0	0.4
CH	51,778	234	2,151	1.2	171.9	171.9	172.6	0.7
CI	52,191	209	2,084	1.3	172.6	172.6	173.2	0.6
CJ	53,281	222	2,162	1.2	172.6	172.6	173.3	0.7
CK	54,734	235	2,006	1.3	172.8	172.8	173.5	0.7
CL	55,336	380	2,908	0.9	172.8	172.8	173.6	0.8
CM	55,825	108	730	3.5	172.9	172.9	173.7	0.8
CN	56,880	145	982	2.6	173.5	173.5	174.5	1.0
CO	57,740	100	712	3.6	175.2	175.2	175.8	0.6
CP	58,066	122	851	3.2	175.4	175.4	176.1	0.7
CQ	59,249	150	973	2.8	176.2	176.2	176.8	0.6
CR	59,612	148	948	2.8	176.6	176.6	177.2	0.6
CS	60,223	413	2,328	1.2	176.9	176.9	177.6	0.7
CT	60,372	404	1,742	1.5	176.9	176.9	177.7	0.8
CU	61,167	325	1,179	2.3	177.1	177.1	178.1	1.0

[1]Feet above Ann Street in the City of Yonkers

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY
(ALL JURISDICTIONS)

FLOODWAY DATA

SAW MILL RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Saw Mill River (continued)								
CV	61,701	131	954	2.8	177.6	177.6	178.5	0.9
CW	62,165	201	1,254	2.0	178.2	178.2	178.9	0.7
CX	62,430	86	735	3.4	178.8	178.8	179.4	0.6
CY	62,966	128	1,296	1.9	178.9	178.9	179.7	0.8
CZ	63,797	120	1,150	2.1	179.0	179.0	179.9	0.9
DA	64,603	78	551	4.5	179.5	179.5	180.5	1.0
DB	64,919	131	861	2.9	180.3	180.3	181.1	0.8
DC	65,428	285	1,945	1.3	181.1	181.1	181.8	0.7
DD	65,967	135	804	3.1	181.3	181.3	182.0	0.7
DE	66,414	97	569	4.3	181.8	181.8	182.6	0.8
DF	66,885	140	964	2.6	183.1	183.1	183.6	0.5
DG	67,772	225	1,068	2.3	183.5	183.5	184.0	0.5
DH	68,355	278	1,357	1.8	185.5	185.5	185.9	0.4
DI	69,332	160	665	3.7	188.1	188.1	188.5	0.4
DJ	69,920	54	335	6.6	189.6	189.6	189.8	0.2
DK	70,171	122	955	2.3	193.2	193.2	193.2	0.0
DL	70,970	90	576	3.8	193.5	193.5	193.7	0.2
DM	72,118	180	1,033	2.1	194.8	194.8	195.3	0.5
DN	72,944	163	790	2.8	195.6	195.6	196.3	0.7
DO	74,060	160	933	2.4	196.6	196.6	197.3	0.7
DP	74,871	120	550	4.0	198.0	198.0	198.5	0.5
DQ	75,683	100	772	2.9	201.8	201.8	202.0	0.2
DR	76,301	58	357	6.2	203.7	203.7	203.7	0.0
DS	77,416	57	260	8.5	207.2	207.2	207.4	0.2
DT	78,045	180	1,108	2.0	209.8	209.8	210.2	0.4
DU	78,550	140	471	4.7	211.5	211.5	211.6	0.1

[1]Feet above Ann Street in the City of Yonkers

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY
(ALL JURISDICTIONS)

FLOODWAY DATA

SAW MILL RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Saw Mill River (continued)								
DV	78,853	140	625	3.2	212.7	212.7	213.4	0.7
DW	79,367	126	473	4.3	214.0	214.0	214.4	0.4
DX	79,509	100	540	3.7	214.7	214.7	215.4	0.7
DY	80,019	60	611	3.3	216.8	216.8	217.3	0.5
DZ	81,058	170	925	2.2	217.0	217.0	217.8	0.8
EA	82,448	60	495	5.3	218.8	218.8	219.4	0.6
EB	82,683	76	492	4.1	221.3	221.3	221.5	0.2
EC	83,516	42	332	5.7	223.2	223.2	223.5	0.3
ED	84,053	75	491	3.8	224.5	224.5	225.0	0.5
EE	84,650	54	315	6.0	225.5	225.5	225.8	0.3
EF	85,629	60	319	5.9	229.1	229.1	229.2	0.1
EG	86,005	40	290	6.5	232.4	232.4	232.4	0.0
EH	86,465	81	488	3.8	233.4	233.4	233.4	0.0
EI	87,606	62	360	5.2	234.6	234.6	234.7	0.1
EJ	88,049	65	373	5.0	236.9	236.9	236.9	0.0
EK	89,473	75	323	5.8	239.8	239.8	240.4	0.6
EL	91,188	185	1,103	1.5	243.5	243.5	243.8	0.3
EM	92,151	110	409	4.1	243.9	243.9	244.2	0.3
EN	93,511	99	449	3.7	246.2	246.2	246.7	0.5
EO	94,044	190	733	2.3	248.5	248.5	248.8	0.3
EP	94,817	66	453	1.7	248.9	248.9	249.3	0.4
EQ	95,924	157	811	1.0	249.0	249.0	249.5	0.5
ER	96,179	155	415	1.9	249.5	249.5	250.2	0.7
ES	96,750	144	766	1.0	249.8	249.8	250.4	0.6
ET	97,846	221	758	1.0	249.8	249.8	250.5	0.7
EU	98,327	220	898	0.9	249.9	249.9	250.6	0.7

[1]Feet above Ann Street in the City of Yonkers

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY
(ALL JURISDICTIONS)

FLOODWAY DATA

SAW MILL RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Saw Mill River (continued)								
EV	99,220	163	220	3.6	250.0	250.0	250.8	0.8
EW	100,161	18	69	11.3	256.0	256.0	256.0	0.0
EX	100,720	45	170	4.6	260.0	260.0	260.3	0.3
EY	101,086	39	206	3.8	262.6	262.6	262.7	0.1
EZ	101,456	88	493	1.6	265.9	265.9	266.3	0.4
FA	102,080	206	527	1.5	267.5	267.5	268.4	0.9
FB	102,413	137	384	2.0	267.5	267.5	268.5	1.0
FC	103,406	40	113	6.9	273.9	273.9	273.9	0.0
FD	105,248	28	105	10.4	286.7	286.7	286.7	0.0
FE	105,822	80	364	2.6	292.7	292.7	293.3	0.6
FF	107,161	48	138	5.7	297.0	297.0	297.1	0.1
FG	108,266	31	209	3.7	300.6	300.6	300.7	0.1
FH	109,499	54	243	3.6	301.4	301.4	301.8	0.4
FI	111,070	99	400	2.2	303.3	303.3	303.7	0.4
FJ	112,184	55	100	4.4	305.8	305.8	305.8	0.0
FK	112,948	91	197	2.2	309.2	309.2	309.2	0.0
FL	113,604	24	103	4.2	315.2	315.2	315.5	0.3
FM	114,190	25	52	8.4	328.2	328.2	328.2	0.0
FN	114,936	65	226	1.9	345.6	345.6	345.8	0.2
FO	115,718	80	611	1.4	367.9	367.9	368.1	0.2
FP	116,318	260	1,891	0.4	368.1	368.1	368.3	0.2
FQ	117,054	424	2,789	0.3	368.1	368.1	368.3	0.2
FR	117,707	105	258	3.2	370.0	370.0	370.8	0.8
FS	117,810	143	483	1.7	372.3	372.3	373.1	0.8
FT	117,936	140	318	2.6	374.2	374.2	374.3	0.1
FU	118,455	119	451	1.8	375.7	375.7	375.9	0.2

[1]Feet above Ann Street in the City of Yonkers

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY (ALL JURISDICTIONS)

FLOODWAY DATA

SAW MILL RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Saw Mill River (continued)								
FV	118,906[1]	99	162	5.1	379.2	379.2	379.5	0.3
FW	119,186[1]	44	121	6.9	391.0	391.0	391.0	0.0
FX	119,589[1]	80	152	5.4	398.9	398.9	398.9	0.0
Saw Mill River West Channel								
A	494[2]	53	514	1.0	123.0	123.0	123.7	0.7
B	1,566[2]	39	334	1.5	123.2	123.2	123.9	0.7
C	2,386[2]	26	218	2.3	125.7	125.7	126.4	0.7
Sheldrake River								
A	12[3]	57	383	4.7	25.8	19.5[4]	20.0	0.5
B	696[3]	55	348	5.2	25.8	24.1[4]	24.1	0.0
C	3,438[3]	164	963	1.9	26.5	26.5	27.1	0.6
D	5,612[3]	48	1,194	1.5	28.6	28.6	29.3	0.7
E	7,380[3]	220	777	2.3	32.4	32.4	33.1	0.7
F	7,842[3]	114	477	3.8	57.8	57.8	58.2	0.4
G	9,038[3]	64	273	6.6	58.2	58.2	59.0	0.8
H	9,800[3]	44	113	7.3	61.1	61.1	61.5	0.4
I	9,934[3]	31	149	5.6	68.4	68.4	68.8	0.4
J	11,263[3]	20	75	11.1	73.5	73.5	73.5	0.0
K	12,379[3]	76	347	2.4	79.7	79.7	80.2	0.5
L	13,964[3]	31	123	5.7	82.9	82.9	83.5	0.6
M	14,256[3]	220	867	0.8	86.5	86.5	87.4	0.9
N	14,815[3]	480	1,783	0.4	101.7	101.7	101.7	0.0
O	15,705[3]	30	78	9.0	105.1	105.1	105.1	0.0
P	17,012[3]	50	498	1.4	130.8	130.8	130.8	0.0

[1]Feet above Ann Street in the City of Yonkers
[2]Feet above confluence with Saw Mill River
[3]Feet above confluence with Mamaroneck River
[4]Elevation computed without consideration of backwater effects from Mamaroneck River

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY
(ALL JURISDICTIONS)

FLOODWAY DATA

SAW MILL RIVER – SAW MILL RIVER WEST CHANNEL – SHELDRAKE RIVER

TABLE 7

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Sheldrake River (continued)								
Q	17,591[1]	34	158	4.4	132.9	132.9	133.1	0.2
R	17,763[1]	27	153	4.6	134.5	134.5	134.7	0.2
S	18,161[1]	19	100	7.0	136.5	136.5	136.9	0.4
T	19,195[1]	75	266	2.6	147.8	147.8	147.9	0.1
U	21,996[1]	36	153	4.6	151.8	151.8	152.2	0.4
V	22,534[1]	62	342	2.0	158.2	158.2	159.0	0.8
W	25,115[1]	28	77	1.9	166.1	166.1	166.9	0.8
X	26,397[1]	54	322	1.7	172.3	172.3	172.9	0.6
Y	27,520[1]	131	332	1.7	180.4	180.4	180.4	0.0
Z	28,268[1]	35	157	3.5	191.3	191.3	191.7	0.4
AA	29,216[1]	33	140	4.0	204.8	204.8	205.2	0.4
AB	30,249[1]	15	97	3.7	218.8	218.8	219.4	0.6
AC	32,348[1]	21	89	3.1	223.5	223.5	224.4	0.9
AD	33,676[1]	19	56	4.9	231.9	231.9	232.6	0.7
AE	34,029[1]	17	58	4.8	235.2	235.2	236.1	0.9
AF	34,187[1]	41	186	1.5	240.0	240.0	240.6	0.6
AG	35,779[1]	226	1,086	0.3	241.2	241.2	241.3	0.1
Shrub Oak Brook								
A	1,071[2]	89	425	3.9	399.1	399.1	399.3	0.2
B	1,503[2]	69	212	7.9	403.0	403.0	403.0	0.0
C	1,878[2]	69	519	3.2	407.2	407.2	407.7	0.5
D	2,084[2]	55	402	4.2	408.3	408.3	409.0	0.7
E	2,853[2]	180	1,326	1.0	410.5	410.5	411.0	0.5
F	3,810[2]	86	372	3.5	411.4	411.4	412.0	0.6
G	5,315[2]	22	134	9.6	412.1	412.1	413.0	0.9
H	7,359[2]	101	571	2.3	418.7	418.7	419.1	0.4
I	8,755[2]	79	481	2.7	419.8	419.8	420.3	0.5

[1] Feet above confluence with Mamaroneck River
[2] Feet above county boundary

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY
(ALL JURISDICTIONS)

FLOODWAY DATA

SHELDRAKE RIVER – SHRUB OAK BROOK

TABLE 7

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Shrub Oak Brook (continued)								
J	9,409[1]	81	373	3.5	420.5	420.5	420.8	0.3
K	9,981[1]	133	589	2.2	422.1	422.1	422.7	0.6
L	10,470[1]	131	952	0.6	422.3	422.3	422.9	0.6
M	10,936[1]	122	755	0.8	422.5	422.5	423.3	0.8
N	13,339[1]	143	683	0.9	422.6	422.6	423.5	0.9
O	14,705[1]	49	269	2.2	422.7	422.7	423.7	1.0
P	15,608[1]	83	610	0.7	423.2	423.2	424.2	1.0
Q	15,927[1]	160	1,025	0.4	423.6	423.6	424.6	1.0
R	16,773[1]	58	380	1.1	423.8	423.8	424.7	0.9
S	17,545[1]	156	834	0.5	424.1	424.1	425.0	0.9
Shrub Oak Brook Tributary 1								
A	125[2]	8	23	9.8	419.9	417.0[4]	417.0	0.0
B	300[2]	31	131	1.8	419.9	419.3[4]	419.6	0.3
C	1,009[2]	18	58	4.0	419.9	419.9	420.4	0.5
D	2,294[2]	37	116	2.0	423.7	423.7	424.5	0.8
Sing Sing Creek								
A	244[3]	78	211	7.9	6.7	6.7	7.1	0.4
B	854[3]	27	132	12.7	12.0	12.0	12.0	0.0
C	1,298[3]	30	137	12.2	20.4	20.4	20.4	0.0
D	1,488[3]	73	842	2.0	34.2	34.2	34.2	0.0
E	1,852[3]	42	155	10.8	50.2	50.2	50.2	0.0
F	2,452[3]	37	175	9.5	66.1	66.1	66.5	0.4
G	2,871[3]	51	244	6.8	89.2	89.2	89.3	0.1
H	3,395[3]	49	167	8.9	97.7	97.7	97.6	0.0

[1]Feet above county boundary
[2]Feet above confluence with Shrub Oak Brook
[3]Feet above confluence with Hudson River
[4]Elevation computed without consideration of backwater effects from Shrub Oak Brook

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY
(ALL JURISDICTIONS)

FLOODWAY DATA

SHRUB OAK BROOK – SHRUB OAK BROOK TRIBUTARY 1 – SING SING CREEK

TABLE 7

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Sing Sing Creek (continued)								
I	4,072[1]	33	223	6.7	115.9	115.9	116.4	0.5
J	5,289[1]	38	136	10.9	127.1	127.1	127.1	0.0
K	6,681[1]	33	148	10.1	153.8	153.8	153.8	0.0
L	7,116[1]	47	180	8.3	165.1	165.1	165.1	0.0
M	7,538[1]	89	257	5.8	173.3	173.3	174.0	0.7
N	8,332[1]	36	164	9.1	185.5	185.5	185.9	0.3
South Fox Meadow Brook								
A	22[2]	82	148	5.1	157.0	157.0	157.0	0.0
B	566[2]	23	74	10.2	173.3	173.3	173.3	0.0
C	817[2]	57	308	2.4	183.9	183.9	184.0	0.1
D	1,437[2]	13	68	11.0	183.9	183.9	184.5	0.6
E	1,614[2]	41	273	2.7	186.5	186.5	186.5	0.0
F	2,616[2]	88	694	1.1	189.8	189.8	190.4	0.6
G	3,667[2]	218	996	0.7	189.8	189.8	190.7	0.9
H	4,684[2]	154	853	0.8	190.0	190.0	190.9	0.9
I	5,605[2]	115	690	1.0	190.1	190.1	190.9	0.8
J	6,815[2]	281	806	0.7	190.1	190.1	190.9	0.8
K	7,333[2]	21	104	2.6	198.6	198.6	198.6	0.0
L	7,998[2]	67	195	1.4	200.6	200.6	201.2	0.6
M	8,426[2]	20	70	3.8	203.8	203.8	203.9	0.1
N	8,577[2]	21	69	3.9	205.7	205.7	206.5	0.8
O	8,931[2]	21	56	4.8	208.1	208.1	208.3	0.2
P	9,096[2]	63	311	0.9	211.8	211.8	211.8	0.0
Q	9,462[2]	46	58	4.6	211.8	211.8	212.0	0.2
R	12,357[2]	246	1,513	0.1	222.6	222.6	222.8	0.2

[1]Feet above confluence with Hudson River
[2]Feet above confluence with Bronx River

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY (ALL JURISDICTIONS)

TABLE 7

FLOODWAY DATA

SING SING CREEK – SOUTH FOX MEADOW BROOK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Sprain Brook								
A	100[1]	61	335	2.8	178.7	178.7	178.7	0.0
B	300[1]	61	332	2.9	178.9	178.9	178.9	0.0
C	500[1]	61	328	2.9	179.0	179.0	179.0	0.0
D	700[1]	60	324	2.9	179.1	179.1	179.1	0.0
E	900[1]	60	321	3.0	179.3	179.3	179.3	0.0
F	1,250[1]	46	225	4.2	179.5	179.5	179.5	0.0
G	1,476[1]	47	234	4.1	179.9	179.9	180.0	0.1
H	1,670[1]	33	124	7.7	180.0	180.0	180.0	0.0
I	1,790[1]	28	155	6.1	181.2	181.2	181.2	0.0
J	1,952[1]	25	156	6.1	181.3	181.3	181.4	0.1
K	2,166[1]	20	78	11.3	182.6	182.6	182.6	0.0
L	2,344[1]	15	107	8.2	185.0	185.0	185.0	0.0
M	2,469[1]	37	269	3.3	185.5	185.5	186.3	0.8
N	2,641[1]	21	147	6.0	185.5	185.5	186.4	0.9
O	2,883[1]	23	219	4.0	191.5	191.5	191.7	0.2
P	3,069[1]	38	279	3.2	191.6	191.6	192.0	0.4
Q	3,279[1]	34	214	3.8	191.6	191.6	192.0	0.4
Sprout Brook								
A	905[2]	*	164	7.9	6.6	1.8[3]	1.8	0.0
B	2,500[2]	*	231	5.6	6.8	6.8	7.0	0.2
C	3,960[2]	*	235	5.5	11.4	11.4	11.5	0.1
D	5,350[2]	*	123	10.6	25.1	25.1	25.1	0.0
E	7,550[2]	70	193	6.7	54.3	54.3	54.5	0.2
F	8,570[2]	53	150	8.4	59.8	59.8	59.8	0.0
G	9,540[2]	60	196	6.4	67.2	67.2	67.2	0.0
H	10,450[2]	70	568	2.2	72.6	72.6	72.9	0.3

[1]Feet above limit of detailed study
[2]Feet above Annsville Creek and Peekskill Hollow Brook
[3]Elevation computed without consideration of backwater effects from Hudson River

*Floodway coincident with channel banks

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY (ALL JURISDICTIONS)

FLOODWAY DATA

SPRAIN BROOK – SPROUT BROOK

TABLE 7

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Stone Hill River								
A	14,185[1]	205	997	2.4	316.5	316.5	317.5	1.0
B	14,360[1]	239	1,540	1.1	318.8	318.8	319.8	1.0
C	14,535[1]	149	725	2.4	318.9	318.9	319.9	1.0
D	14,815[1]	24	141	14.8	319.3	319.3	319.9	0.6
E	20,555[1]	75	375	4.5	387.9	387.9	387.9	0.0
F	21,155[1]	251	1,149	1.6	388.3	388.3	389.3	1.0
G	21,249[1]	239	1,096	1.6	388.5	388.5	389.5	1.0
H	21,271[1]	241	1,100	1.8	388.5	388.5	389.5	1.0
I	21,725[1]	328	1,250	1.3	391.6	391.6	392.5	0.9
J	22,585[1]	220	854	2.0	392.4	392.4	393.0	0.6
K	23,450[1]	251	628	2.5	393.2	393.2	393.5	0.3
L	24,240[1]	259	546	3.3	394.8	394.8	394.8	0.0
M	25,058[1]	37	161	9.9	397.5	397.5	397.5	0.0
N	25,695[1]	134	707	2.1	400.3	400.3	401.2	0.9
O	26,300[1]	199	819	1.8	400.7	400.7	401.5	0.8
P	27,155[1]	88	332	4.6	401.6	401.6	402.2	0.6
Sunnyside Brook								
A	300[2]	10	45	12.2	22.4	22.4	22.7	0.3
B	823[2]	43	85	6.5	57.1	57.1	57.7	0.6
C	1,323[2]	30	189	2.9	88.5	88.5	89.0	0.5
D	1,892[2]	29	72	7.6	130.2	130.2	130.8	0.6
E	2,559[2]	26	73	7.5	175.3	175.3	175.9	0.6
F	3,392[2]	25	60	9.1	218.8	218.8	218.8	0.0
G	3,957[2]	87	324	1.7	253.5	253.5	253.8	0.3
H	4,604[2]	61	178	3.1	264.2	264.2	265.0	0.8
I	5,266[2]	17	57	6.5	277.8	277.8	278.4	0.6

[1]Feet above confluence with Muscoot Reservoir
[2]Feet above limit of floodway

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY
(ALL JURISDICTIONS)

FLOODWAY DATA

STONE HILL RIVER – SUNNYSIDE BROOK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Sunnyside Brook (continued)								
J	6,378[1]	94	85	4.4	284.0	284.0	284.9	0.9
K	7,129[1]	38	60	6.2	298.3	298.3	298.5	0.2
L	7,886[1]	12	43	8.6	347.4	347.4	347.5	0.1
Tibbetts Brook								
A	739[2]	42	191	4.6	30.0	30.0	30.8	0.8
B	1,268[2]	29	149	5.9	32.0	32.0	32.4	0.4
C	1,714[2]	43	262	3.4	34.4	34.4	35.4	1.0
D	2,128[2]	115	466	1.9	34.9	34.9	35.9	1.0
E	2,671[2]	70	368	2.4	35.2	35.2	35.2	1.0
F	3,482[2]	125	374	2.4	36.0	36.0	37.0	1.0
G	4,111[2]	100	457	1.9	36.7	36.7	37.9	1.1
Titicus River								
A	200[3]	58	417	6.4	324.5	324.5	325.5	1.0
B	570[3]	45	428	6.2	327.0	327.0	327.2	0.2
C	1,315[3]	100	651	4.1	329.0	329.0	330.0	1.0
D	3,270[3]	284	806	3.3	336.0	336.0	337.0	1.0
E	4,440[3]	55	351	7.6	342.7	342.7	343.2	0.5
F	6,830[3]	75	330	6.7	363.7	363.7	364.6	0.9
G	7,860[3]	80	323	6.9	376.0	376.0	376.0	0.0
H	9,895[3]	131	322	6.9	405.3	405.3	405.4	0.1
I	11,275[3]	73	432	5.1	453.6	453.6	453.6	0.0
J	12,175[3]	45	204	10.9	459.2	459.2	459.2	0.0
K	14,270[3]	170	473	4.7	466.3	466.3	466.9	0.6
L	16,190[3]	203	845	2.6	472.9	472.9	473.9	1.0
M	17,530[3]	87	452	4.4	480.0	480.0	480.0	0.0

[1]Feet above limit of floodway
[2]Feet above county boundary
[3]Feet above Titicus Reservoir

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY
(ALL JURISDICTIONS)

FLOODWAY DATA

SUNNYSIDE BROOK – TIBBETTS BROOK – TITICUS RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Titicus River (continued)								
N	18,625[1]	63	300	6.7	487.2	487.2	487.3	0.1
O	19,515[1]	120	738	2.7	494.4	494.4	494.8	0.4
P	21,050[1]	260	1,418	1.4	495.0	495.0	495.6	0.6
Tributary to Laurel Reservoir								
A	721[2]	80	286	0.7	355.8	355.8	355.8	0.0
B	2,902[2]	60	145	1.4	379.7	379.7	379.7	0.0
Tributary to Mill River								
A	1,399[3]	68	449	0.6	372.8	372.4[4]	373.4	1.0
B	5,494[3]	80	302	0.9	411.6	411.6	412.5	0.9
Tributary 1 to Wampus River								
A	1,000[4]	91	179	2.2	375.8	375.8	376.4	0.6
B	2,360[4]	70	100	3.9	381.8	381.8	381.8	0.0
C	3,725[4]	15	41	9.5	413.0	413.0	413.3	0.3
D	4,345[4]	29	54	7.3	434.9	434.9	434.9	0.0
E	5,200[4]	14	40	9.7	464.2	464.2	464.5	0.3
Tributary 2 to Wampus River								
A	432[4]	152	1,035	0.4	389.6	389.6	390.0	0.4
B	1,614[4]	150	831	0.4	389.6	389.6	390.0	0.4
C	5,073[4]	13	34	9.3	407.7	407.7	408.1	0.4
D	6,385[4]	30	45	7.0	477.7	477.7	477.7	0.0

[1]Feet above Titicus Reservoir
[2]Feet above county boundary
[3]Feet above the confluence with Mill River
[4]Feet above confluence with Wampus River

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY (ALL JURISDICTIONS)

FLOODWAY DATA

TITICUS RIVER – TRIBUTARY TO LAUREL RESERVOIR – TRIBUTARY TO MILL RIVER – TRIBUTARY 1 TO WAMPUS RIVER – TRIBUTARY 2 TO WAMPUS RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Tributary 3 to Wampus River								
A	984[1]	28	32	6.1	430.0	430.0	430.0	0.0
B	2,423[1]	146	878	0.2	472.0	472.0	472.0	0.0
C	3,542[1]	182	946	0.2	472.0	472.0	472.0	0.0
Troublesome Brook								
A	112[2]	41	156	6.6	104.1[4]	99.9	100.2	0.4
B	1,143[2]	174	530	2.0	108.1	108.1	108.1	0.0
C	1,819[2]	57	275	3.8	110.1	110.1	111.0	0.9
D	2,963[2]	50	243	4.3	114.1	114.1	114.9	0.8
E	6,063[2]	40	265	3.9	120.8	120.8	121.8	1.0
F	6,376[2]	56	266	3.9	121.7	121.7	122.1	0.4
G	6,881[2]	22	116	13.1	164.8	164.8	164.8	0.0
Unnamed Tributary to Plum Brook								
A	157[3]	79	134	3.3	275.0	275.0	275.4	0.4
B	313[3]	73	291	1.5	277.8	277.8	278.5	0.7
C	771[3]	57	232	1.9	278.4	278.4	279.1	0.7
D	820[3]	60	190	2.3	282.6	282.6	283.6	1.0
E	1,234[3]	20	61	7.2	282.8	282.8	283.3	0.5
F	1,331[3]	142	564	0.8	288.5	288.5	288.5	0.0
G	1,703[3]	44	177	2.5	288.7	288.7	288.8	0.1
H	1,756[3]	21	93	4.7	289.7	289.7	289.8	0.1
I	1,779[3]	65	463	0.9	292.1	292.1	292.1	0.0
J	2,033[3]	51	73	0.6	292.1	292.1	292.1	0.0

[1]Feet above confluence with Wampus River
[2]Feet above confluence with Bronx River
[3]Feet above confluence with Plum Brook
[4]Elevation computed without consideration of backwater effects from Bronx River

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY
(ALL JURISDICTIONS)

FLOODWAY DATA

TRIBUTARY 3 TO WAMPUS RIVER – TROUBLESOME BROOK – UNNAMED TRIBUTARY TO PLUM BROOK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Wampus River								
A	850[1]	200	700	2.1	369.2	368.1[4]	368.4	0.3
B	1,919[1]	270	1,029	1.4	370.0	370.0	370.3	0.3
C	3,496[1]	94	526	2.2	375.1	375.1	375.7	0.6
D	6,210[1]	279	1,291	0.8	375.6	375.6	376.2	0.6
E	8,235[1]	339	945	1.1	377.0	377.0	377.6	0.6
F	9,245[1]	110	566	1.8	384.7	384.7	384.9	0.2
G	10,219[1]	59	187	4.6	401.0	401.0	401.9	0.9
H	12,880[1]	55	51	5.2	423.0	423.0	423.1	0.1
I	13,790[1]	60	120	2.2	428.5	428.5	428.9	0.4
West Branch Blind Brook								
A	675[2]	14	41	9.8	131.5	131.5	131.6	0.1
B	1,900[2]	21	82	5.0	146.4	146.4	147.3	0.9
C	3,500[2]	16	40	9.0	171.0	171.0	171.1	0.1
D	5,225[2]	20	66	4.6	200.7	200.7	200.8	0.1
E	5,890[2]	234	1,556	0.2	214.4	214.4	215.2	0.8
Wickers Creek								
A	0[3]	66	130	5.8	6.6	3.6[5]	3.6	0.0
B	508[3]	19	70	10.8	10.9	10.9	11.2	0.3
C	937[3]	25	108	7.0	22.5	22.5	22.9	0.4
D	1,182[3]	18	111	6.8	35.8	35.8	36.7	0.9
E	1,411[3]	24	75	10.1	58.5	58.5	58.5	0.0
F	1,704[3]	11	58	13.0	72.7	72.7	72.7	0.0
G	2,042[3]	26	83	9.1	82.5	82.5	82.7	0.2
H	2,293[3]	23	75	10.1	92.1	92.1	92.1	0.0

[1]Feet above confluence with Byram River Reach 2
[2]Feet above confluence with Blind Brook
[3]Feet above confluence with Hudson River
[4]Elevation computed without consideration of backwater effects from Byram River
[5]Elevation computed without consideration of backwater effects from Hudson River

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY
(ALL JURISDICTIONS)

FLOODWAY DATA

WAMPUS RIVER – WEST BRANCH BLIND BROOK – WICKERS CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Woodlands Road Brook 1								
A	830[1]	25	92	2.7	71.8	71.8	72.7	0.9
B	1,606[1]	52	82	2.3	72.5	72.5	73.3	0.8
C	1,967[1]	30	27	5.4	91.6	91.6	91.6	0.0
D	2,399[1]	21	102	1.8	92.2	92.2	92.3	0.1
Woodlands Road Brook 2								
A	139[2]	9	19	5.5	72.9	72.9	73.8	0.9
B	687[2]	40	51	2.0	86.2	86.2	86.3	0.1
C	1,019[2]	27	41	2.6	88.5	88.5	88.6	0.1
D	1,193[2]	8	32	3.3	92.2	92.2	92.4	0.2

[1]Feet above confluence with Brentwood Brook
[2]Feet above confluence with Woodlands Road Brook 1

FEDERAL EMERGENCY MANAGEMENT AGENCY

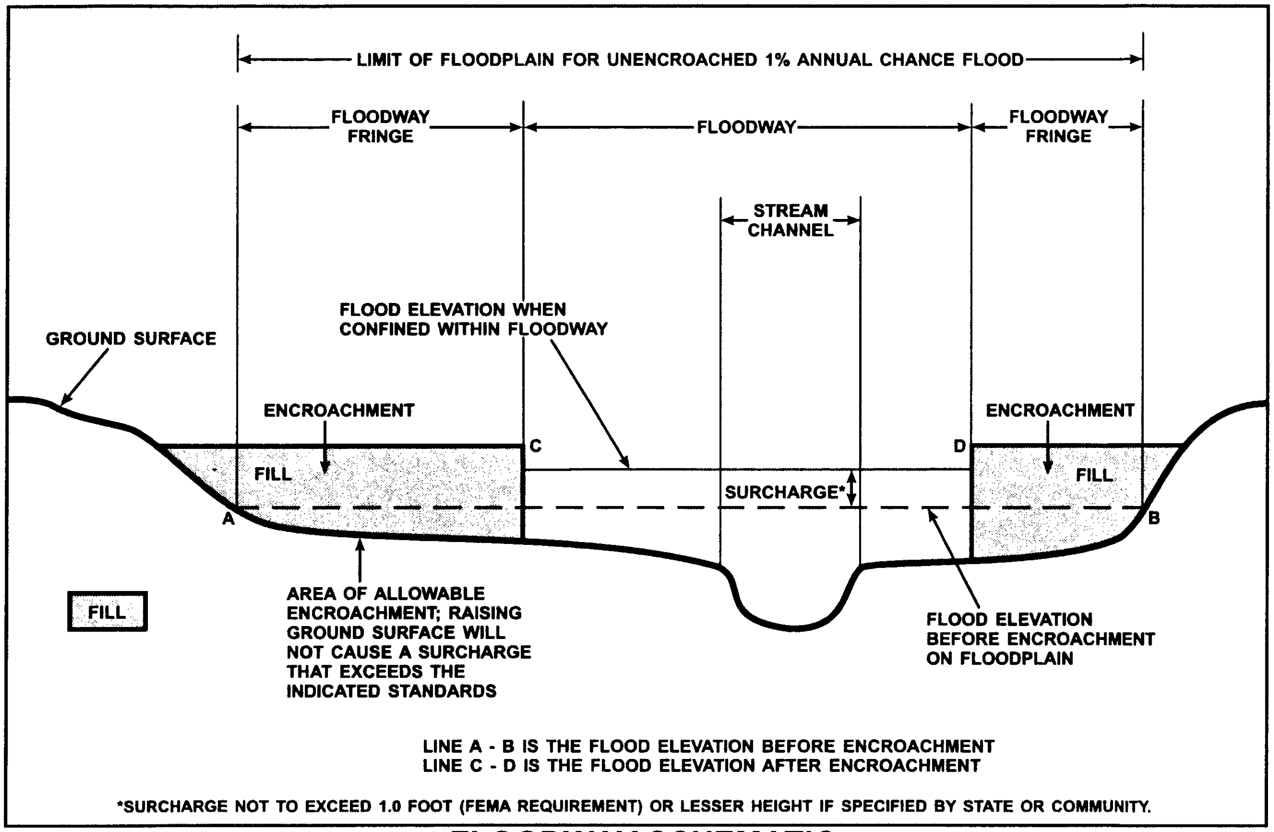
WESTCHESTER COUNTY, NY
(ALL JURISDICTIONS)

FLOODWAY DATA

WOODLANDS ROAD BROOK 1 – WOODLANDS ROAD BROOK 2

TABLE 7

The area between the floodway and 1-percent annual chance floodplain boundaries is termed the floodway fringe. The floodway fringe encompasses the portion of the floodplain that could be completely obstructed without increasing the water-surface elevation of the 1-percent annual chance flood by more than 1.0 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to floodplain development are shown in Figure 3.



FLOODWAY SCHEMATIC Figure 3

5.0 INSURANCE APPLICATIONS

For flood insurance rating purposes, flood insurance zone designations are assigned to a community based on the results of the engineering analyses. The zones are as follows:

Zone A

Zone A is the flood insurance rate zone that corresponds to the 1-percent annual chance floodplains that are determined in the FIS by approximate methods. Because detailed hydraulic analyses are not performed for such areas, no base flood elevations or depths are shown within this zone.

Zone AE

Zone AE is the flood insurance rate zone that corresponds to the 1-percent annual chance floodplains that are determined in the FIS by detailed methods. In most instances, whole-foot base flood elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone AH

Zone AH is the flood insurance rate zone that corresponds to the areas of 1-percent annual chance shallow flooding (usually areas of ponding) where average depths are between 1 and 3 feet. Whole-foot base flood elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone AO

Zone AO is the flood insurance rate zone that corresponds to the areas of 1-percent annual chance shallow flooding (usually sheet flow on sloping terrain) where average depths are between 1 and 3 feet. Average whole-foot depths derived from the detailed hydraulic analyses are shown within this zone.

Zone AR

Area of special flood hazard formerly protected from the 1-percent annual chance flood event by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1-percent annual chance or greater flood event.

Zone A99

Zone A99 is the flood insurance rate zone that corresponds to areas of the 1-percent annual chance floodplain that will be protected by a Federal flood protection system where construction has reached specified statutory milestones. No base flood elevations or depths are shown within this zone.

Zone V

Zone V is the flood insurance rate zone that corresponds to the 1-percent annual chance coastal floodplains that have additional hazards associated with storm waves. Because approximate hydraulic analyses are performed for such areas, no base flood elevations are shown within this zone.

Zone VE

Zone VE is the flood insurance rate zone that corresponds to the 1-percent annual chance coastal floodplains that have additional hazards associated with storm waves. Whole-foot base flood elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone X

Zone X is the flood insurance rate zone that corresponds to areas outside the 0.2-percent annual chance floodplain, areas within the 0.2-percent annual chance floodplain, and to areas of 1-percent annual chance flooding where average depths are less than 1 foot, areas of 1-percent annual chance flooding where the contributing drainage area is less than 1 square mile, and areas protected from the 1-percent annual chance flood by levees. No base flood elevations or depths are shown within this zone.

Zone D

Zone D is the flood insurance rate zone that corresponds to unstudied areas where flood hazards are undetermined, but possible.

6.0 FLOOD INSURANCE RATE MAP

The FIRM is designed for flood insurance and floodplain management applications.

For flood insurance applications, the map designates flood insurance rate zones as described in Section 5.0 and, in the 1-percent annual chance floodplains that were studied by detailed methods, shows selected whole-foot base flood elevations or average depths. Insurance agents use the zones and base flood elevations in conjunction with information on structures and their contents to assign premium rates for flood insurance policies.

For floodplain management applications, the map shows by tints, screens, and symbols, the 1- and 0.2-percent annual chance floodplains. Floodways and the locations of selected cross sections used in the hydraulic analyses and floodway computations are shown where applicable.

The current FIRM presents flooding information for the entire geographic area of Westchester County. Previously, separate Flood Hazard Boundary Maps and/or FIRMs were prepared for each identified flood-prone incorporated community and the unincorporated areas of the county. This countywide FIRM also includes flood hazard information that was presented separately on Flood Boundary and Floodway Maps (FBFMs), where applicable. Historical data relating to the maps prepared for each community, up to and including this countywide FIS, are presented in Table 9, "Community Map History."

7.0 OTHER STUDIES

Because it is based on more up-to-date analyses, this FIS supersedes the previously printed FISs for the communities within Westchester County.

COMMUNITY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISIONS DATE	FIRM EFFECTIVE DATE	FIRM REVISIONS DATE
Village of Ardsley	April 13, 1973	None	September 29, 1978	September 28, 2007
Town of Bedford	May 31, 1974	July 9, 1976 July 3, 1977	December 4, 1979	September 28, 2007
Village of Briarcliff Manor	June 28, 1974	None	February 1, 1978	September 28, 2007
Village of Bronxville	July 13, 1973	None	March 1, 1979	September 28, 2007
Village of Buchanan	October 29, 1976	None	July 27, 1979	September 28, 2007
Town of Cortlandt	May 31, 1974	August 13, 1976	April 17, 1985	September 28, 2007
Village of Croton-on-Hudson	May 10, 1974	January 30, 1976	November 2, 1983	September 28, 2007
Village of Dobbs Ferry	May 17, 1974	June 11, 1976	April 16, 1979	September 28, 2007
Town of Eastchester	May 10, 1974	None	November 15, 1979	September 28, 2007
Village of Elmsford	April 12, 1974	May 28, 1976	June 15, 1979	September 28, 2007
Town of Greenburgh	June 21, 1974	July 30, 1976	August 15, 1980	June 18, 1987 September 28, 2007
Town of Harrison	March 5, 1976	None	March 15, 1982	August 5, 1991 September 28, 2007
Village of Hastings-on-Hudson	November 8, 1974	October 3, 1975	April 2, 1979	September 28, 2007

TABLE 9

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY
(ALL JURISDICTIONS)

COMMUNITY MAP HISTORY

COMMUNITY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISIONS DATE	FIRM EFFECTIVE DATE	FIRM REVISIONS DATE
Village of Irvington	June 28, 1974	January 16, 1976	March 15, 1979	September 28, 2007
Village of Larchmont	June 14, 1973	November 23, 1973	September 1, 1977	July 16, 1984 September 28, 2007
Town of Lewisboro	November 1, 1974	None	March 9, 1984	September 28, 2007
Town of Mamaroneck	June 15, 1979	None	June 15, 1979	September 15, 1989 September 28, 2007
Village of Mamaroneck	September 14, 1973	January 16, 1976	December 1, 1977	October 29, 1982 April 3, 1984 September 28, 2007
Village of Mount Kisco	December 9, 1977	None	September 18, 1986	September 28, 2007
Town of Mount Pleasant	May 3, 1974	October 17, 1975	June 4, 1980	January 29, 1982 September 28, 2007
City of Mount Vernon	June 28, 1974	None	October 17, 1978	September 28, 2007
Town of New Castle	June 28, 1974	September 19, 1975	September 5, 1979	September 28, 2007
City of New Rochelle	December 28, 1973	April 9, 1976	June 18, 1980	January 6, 1983 September 28, 2007
Town of North Castle	June 28, 1974	July 30, 1976	December 2, 1983	January 2, 1991 September 28, 2007

TABLE 9

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY
(ALL JURISDICTIONS)

COMMUNITY MAP HISTORY

COMMUNITY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISIONS DATE	FIRM EFFECTIVE DATE	FIRM REVISIONS DATE
Town of North Salem	January 31, 1975	None	July 3, 1986	September 28, 2007
Town of Ossining	October 25, 1974	February 25, 1977	March 16, 1983	September 28, 2007
Village of Ossining	July 19, 1974	January 30, 1976	July 5, 1982	September 28, 2007
City of Peekskill	May 31, 1974	October 24, 1975	August 15, 1984	September 28, 2007
Village of Pelham	May 17, 1974	February 27, 1976 November 12, 1976	April 2, 1979	September 28, 2007
Village of Pelham Manor	May 10, 1974	None	January 3, 1979	September 28, 2007
Village of Pleasantville	April 12, 1974	None	February 15, 1979	September 28, 2007
Village of Port Chester	May 3, 1974	February 13, 1976	January 16, 1980	May 1, 1984 September 28, 2007
Town of Pound Ridge	May 24, 1974	January 2, 1976	May 25, 1984	February 6, 1991 September 28, 2007
City of Rye	May 20, 1977	November 3, 1978	April 1, 1980	May 16, 1983 November 1, 1984 September 28, 2007
Village of Rye Brook	December 28, 1973	December 26, 1975	September 28, 1979	September 28, 2007
Village of Scarsdale	December 28, 1973	July 2, 1976	June 18, 1980	September 28, 2007

TABLE 9

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY
(ALL JURISDICTIONS)

COMMUNITY MAP HISTORY

COMMUNITY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISIONS DATE	FIRM EFFECTIVE DATE	FIRM REVISIONS DATE
Village of Sleepy Hollow	December 13, 1974	None	August 17, 1981	September 28, 2007
Town of Somers	December 20, 1974	June 4, 1976	September 4, 1986	September 28, 2007
Village of Tarrytown	May 31, 1974	September 24, 1976	November 18, 1981	September 28, 2007
Village of Tuckahoe	May 10, 1974	None	February 15, 1979	September 28, 2007
City of White Plains	March 16, 1973	July 2, 1976	January 2, 1980	September 28, 2007
City of Yonkers	January 9, 1974	October 8, 1976	August 15, 1980	January 21, 1998 September 28, 2007
Town of Yorktown	September 20, 1974	July 16, 1976	November 15, 1985	August 16, 1993 September 28, 2007

TABLE 9

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY
(ALL JURISDICTIONS)

COMMUNITY MAP HISTORY

Information pertaining to revised and unrevised flood hazards for each jurisdiction within Westchester County has been compiled into this FIS. Therefore, this FIS supersedes all previously printed FIS Reports, FHBMs, FBFMs, and FIRMs for all of the incorporated jurisdictions within Westchester County.

8.0 LOCATION OF DATA

Information concerning the pertinent data used in the preparation of this FIS can be obtained by contacting FEMA, Federal Insurance and Mitigation Division, 26 Federal Plaza, 13th Floor, New York, New York .

9.0 BIBLIOGRAPHY AND REFERENCES

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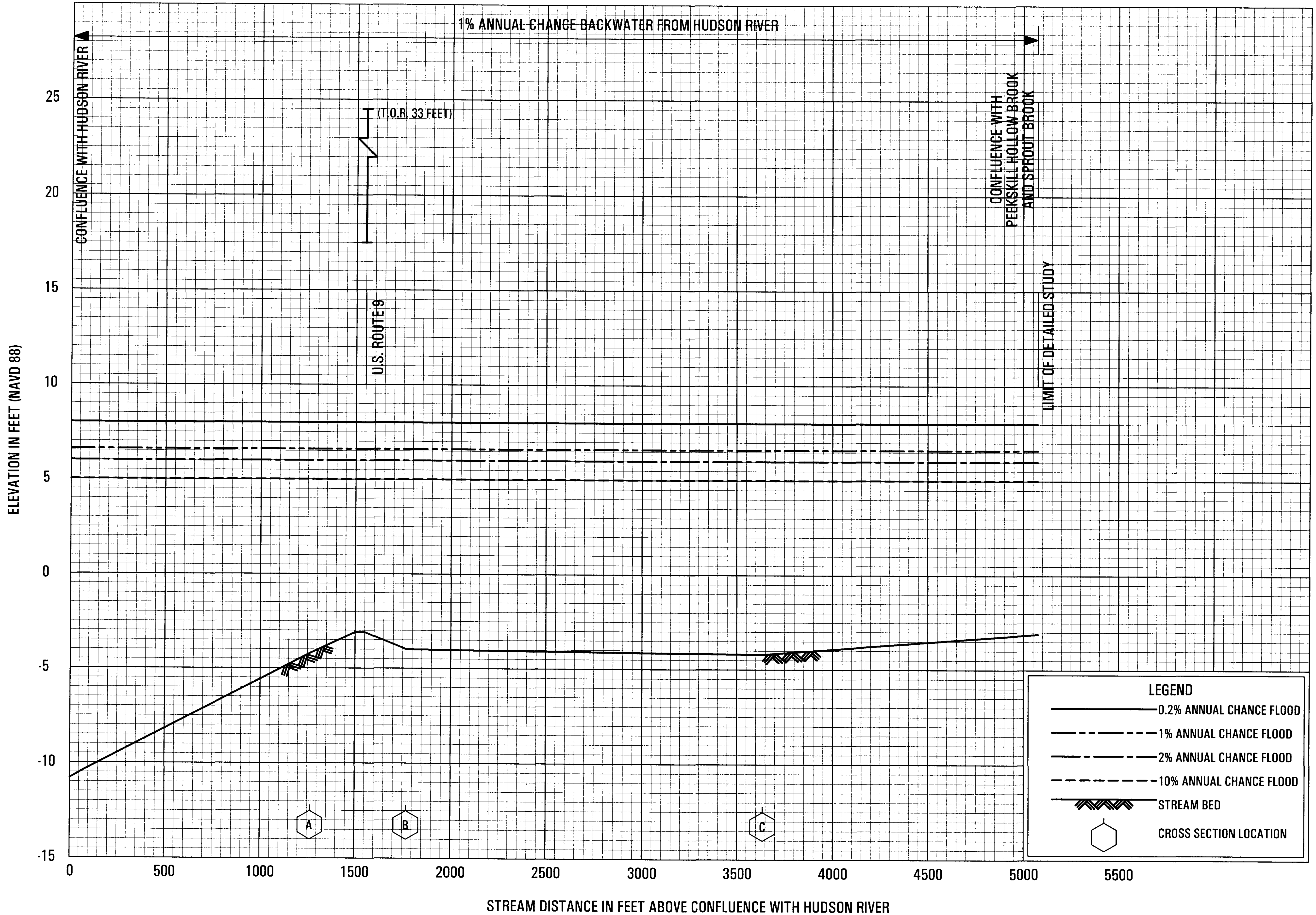


FLOOD PROFILES

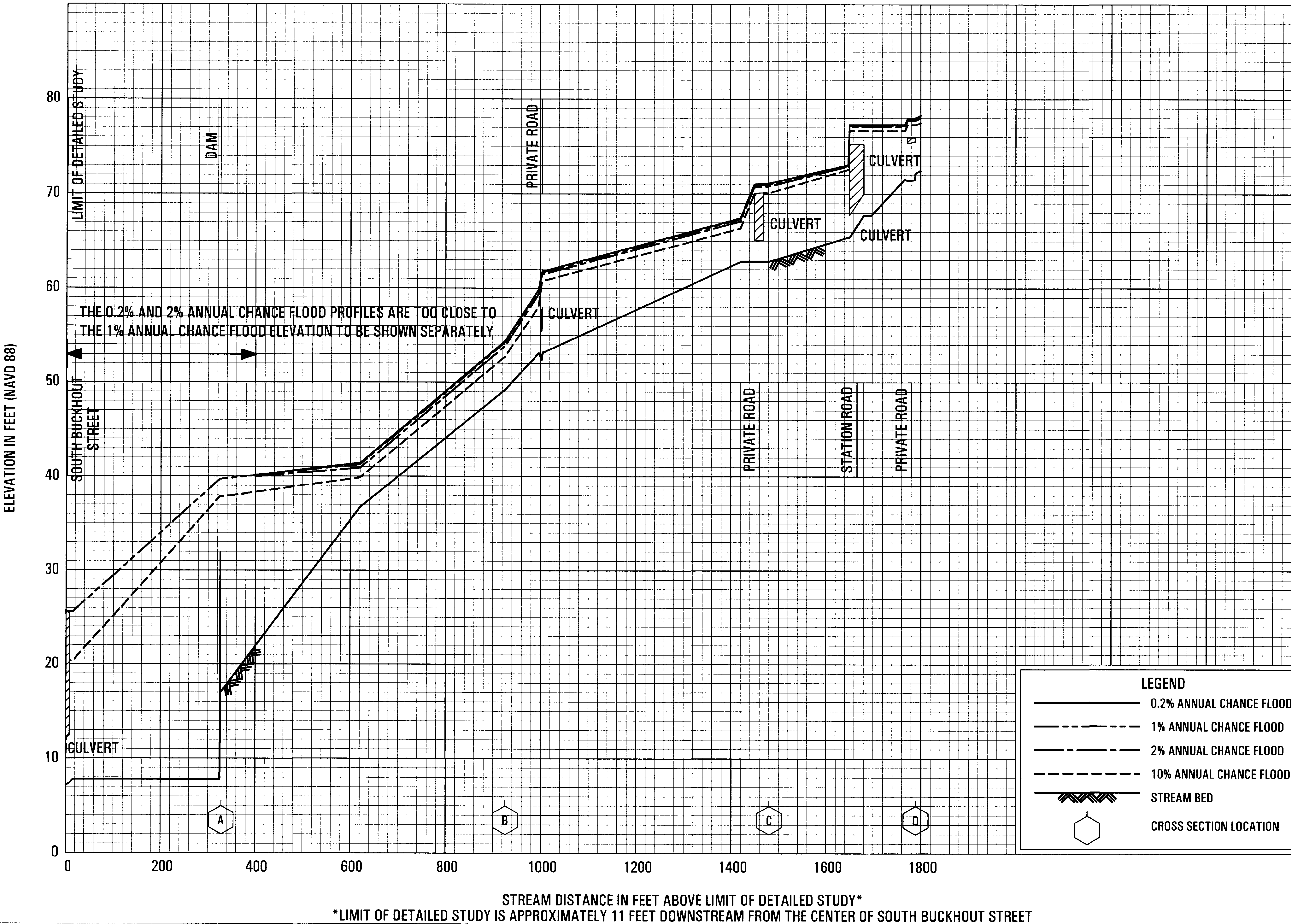
ANNSVILLE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY

(ALL JURISDICTIONS)

01P



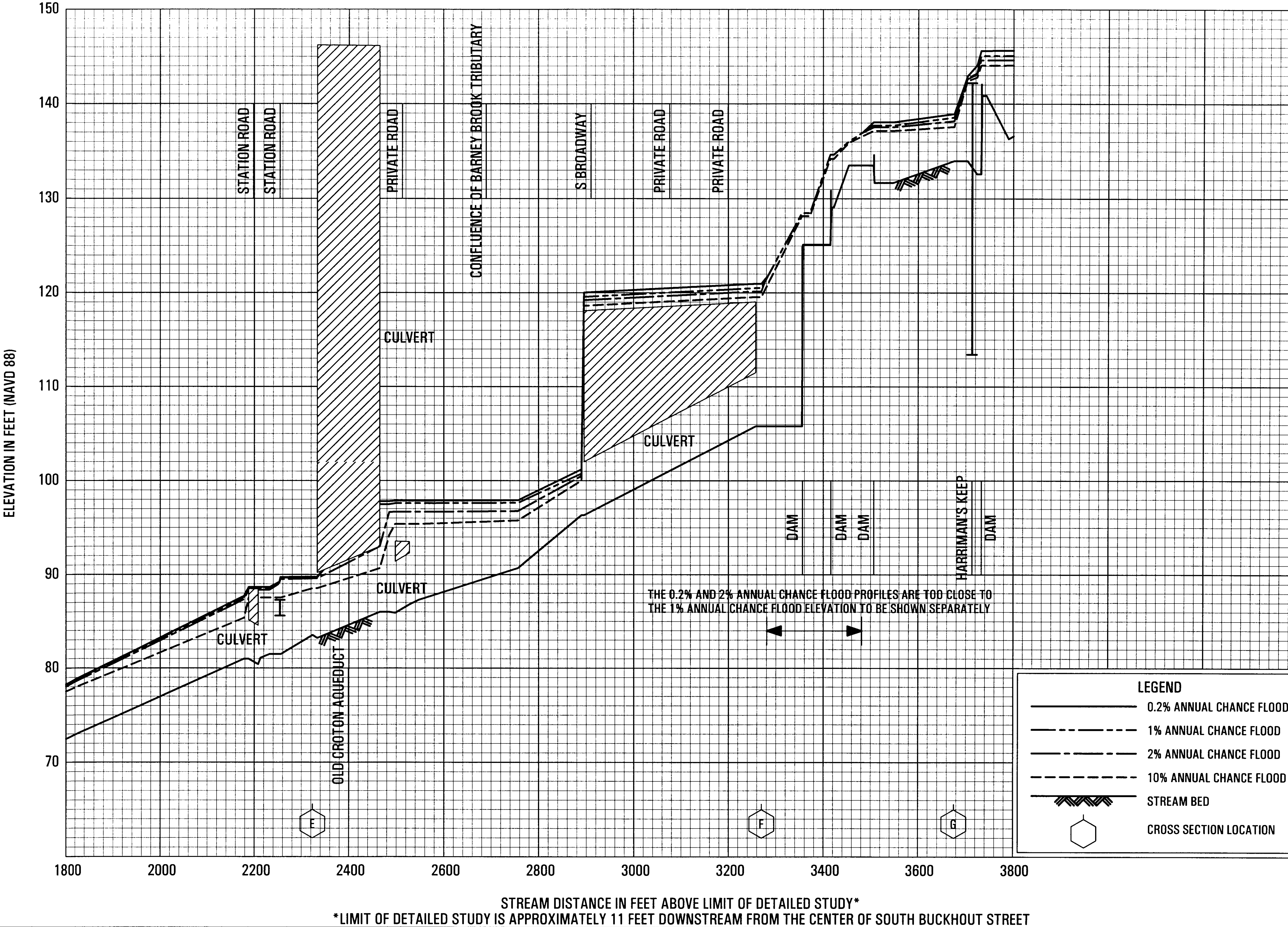
FLOOD PROFILES

BARNEY BROOK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY

(ALL JURISDICTIONS)



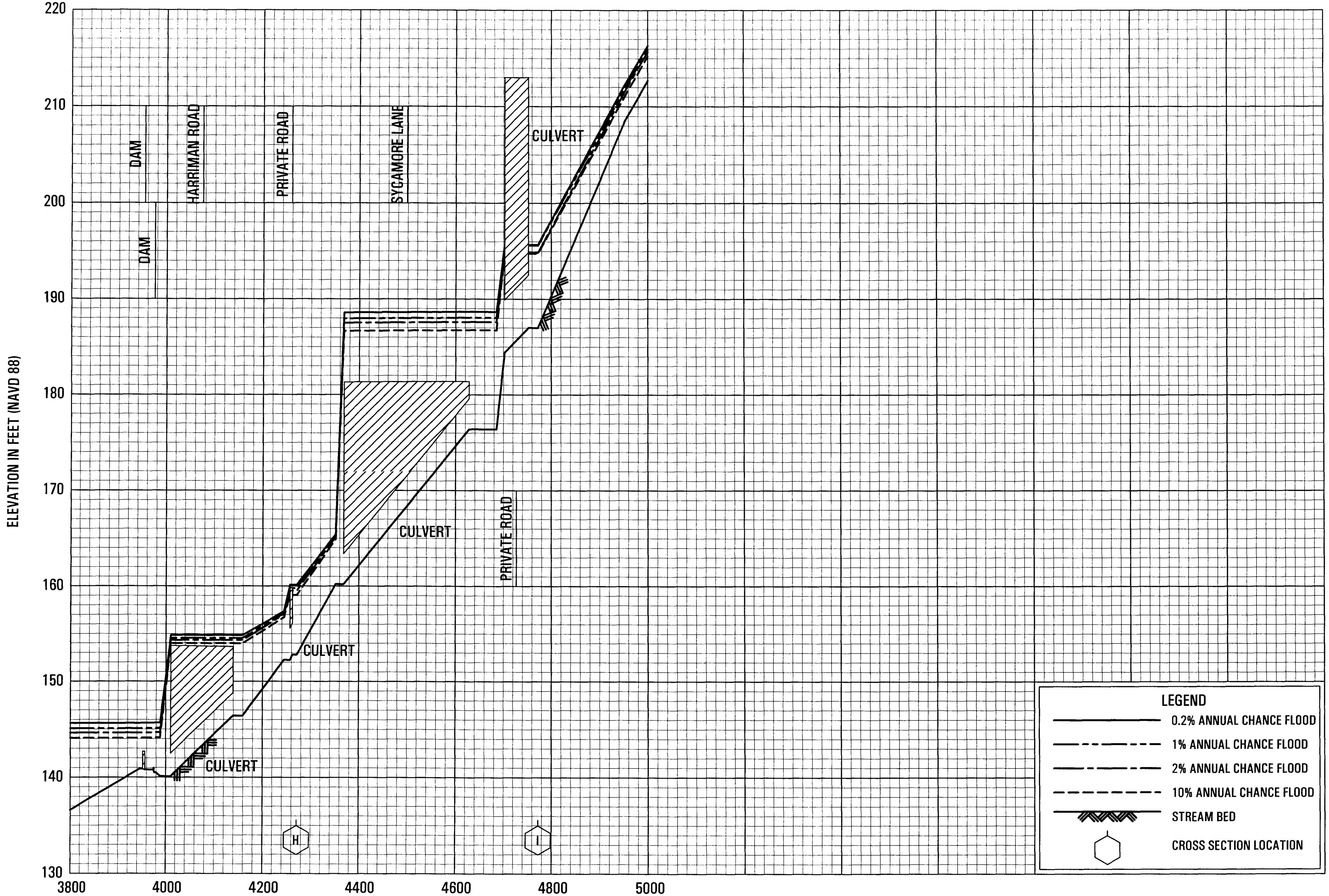
FLOOD PROFILES

BARNEY BROOK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY

(ALL JURISDICTIONS)



STREAM DISTANCE IN FEET ABOVE LIMIT OF DETAILED STUDY*
*LIMIT OF DETAILED STUDY IS APPROXIMATELY 11 FEET DOWNSTREAM FROM THE CENTER OF SOUTH BUCKHOUT STREET

FLOOD PROFILES

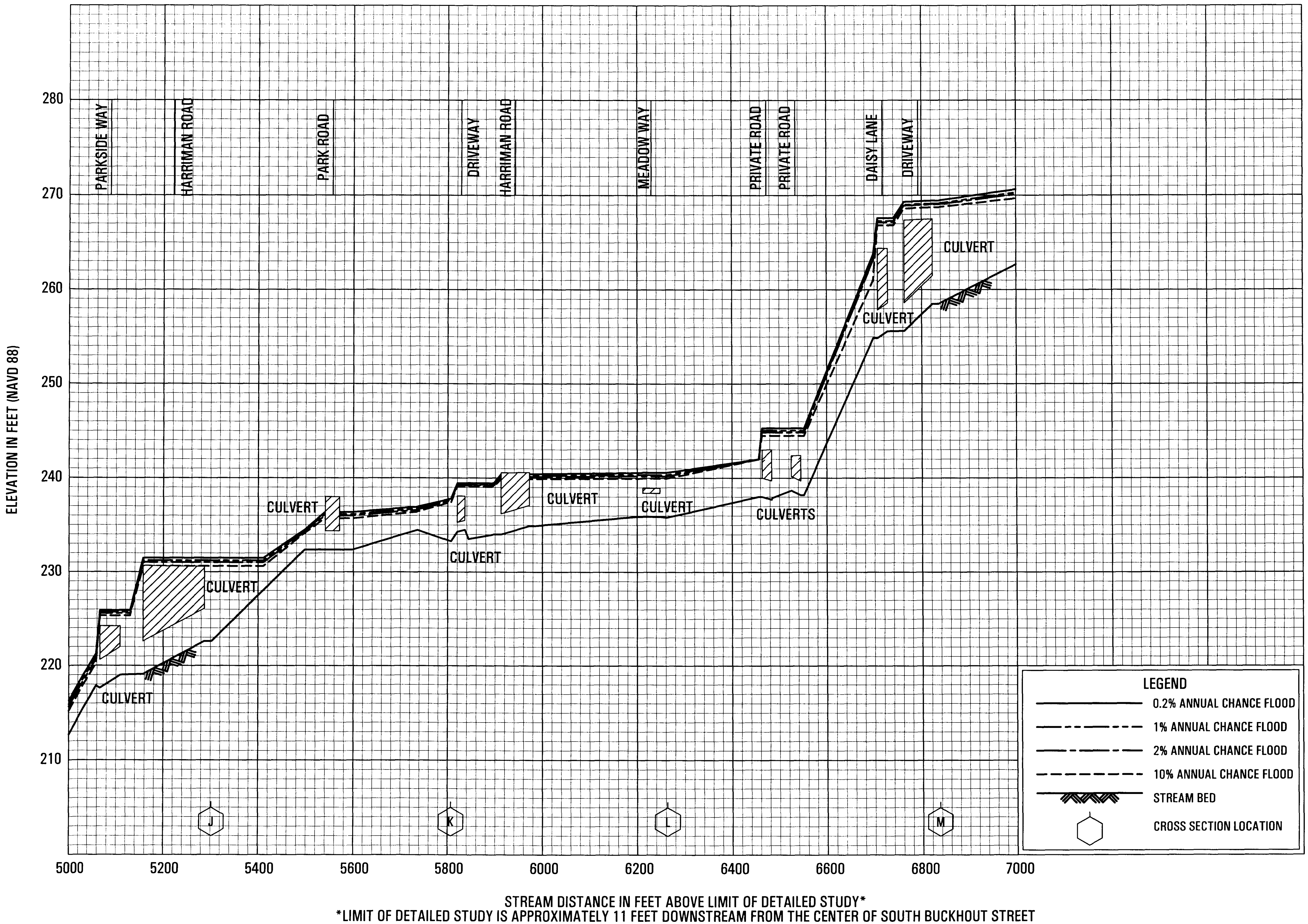
BARNEY BROOK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY

(ALL JURISDICTIONS)

04P



FLOOD PROFILES

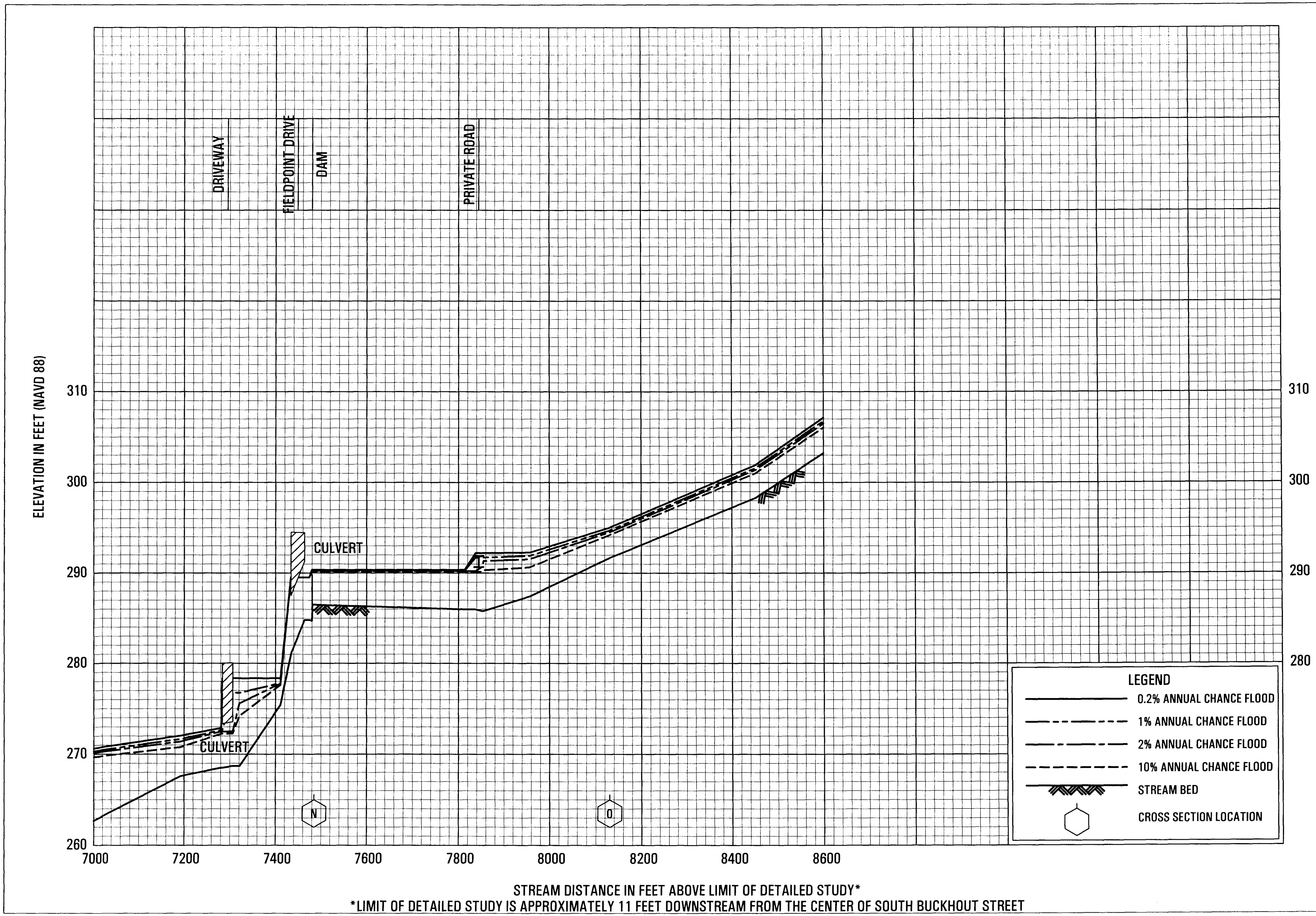
BARNEY BROOK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY

(ALL JURISDICTIONS)

05P



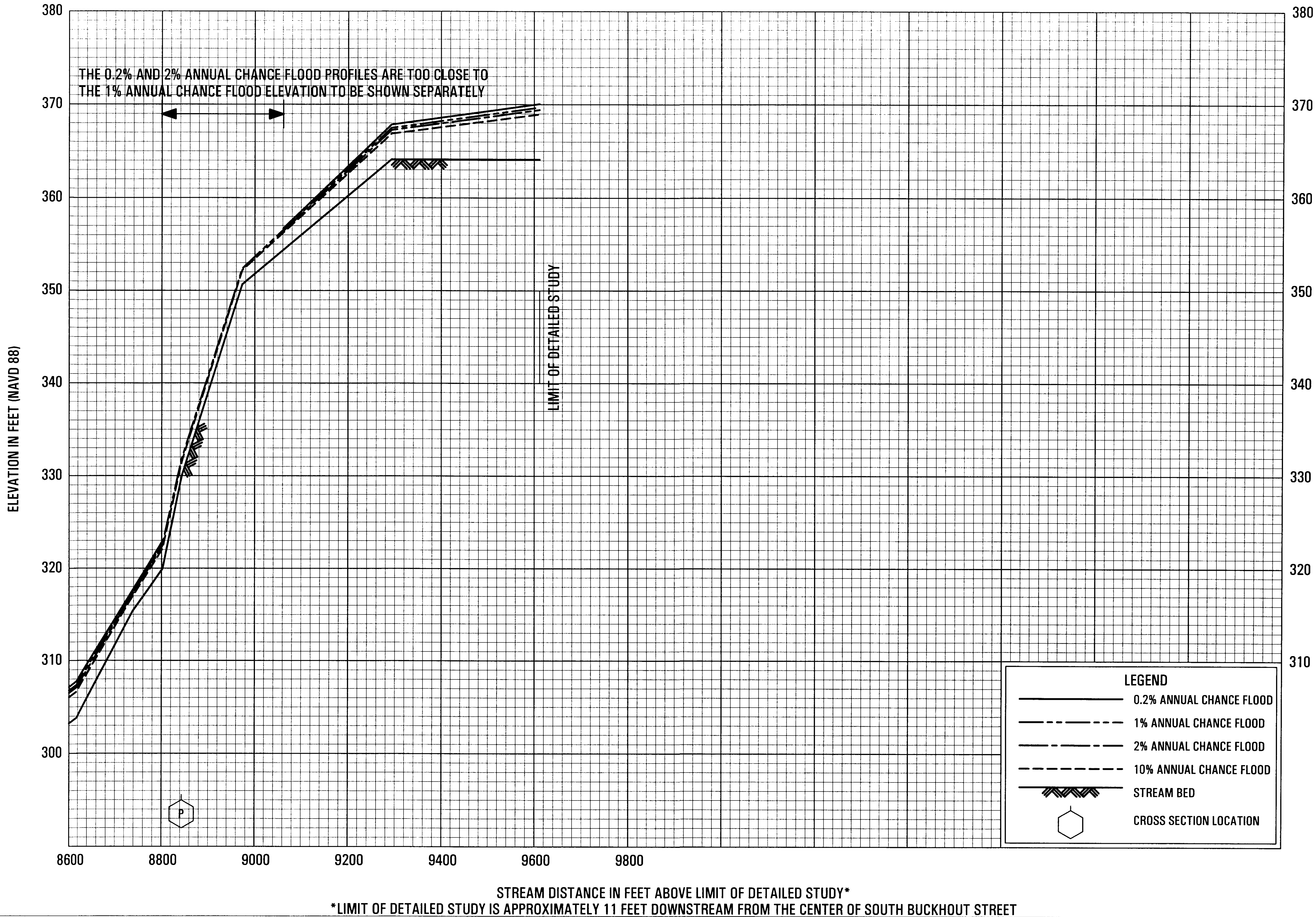
FLOOD PROFILES

BARNEY BROOK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY

(ALL JURISDICTIONS)



FLOOD PROFILES

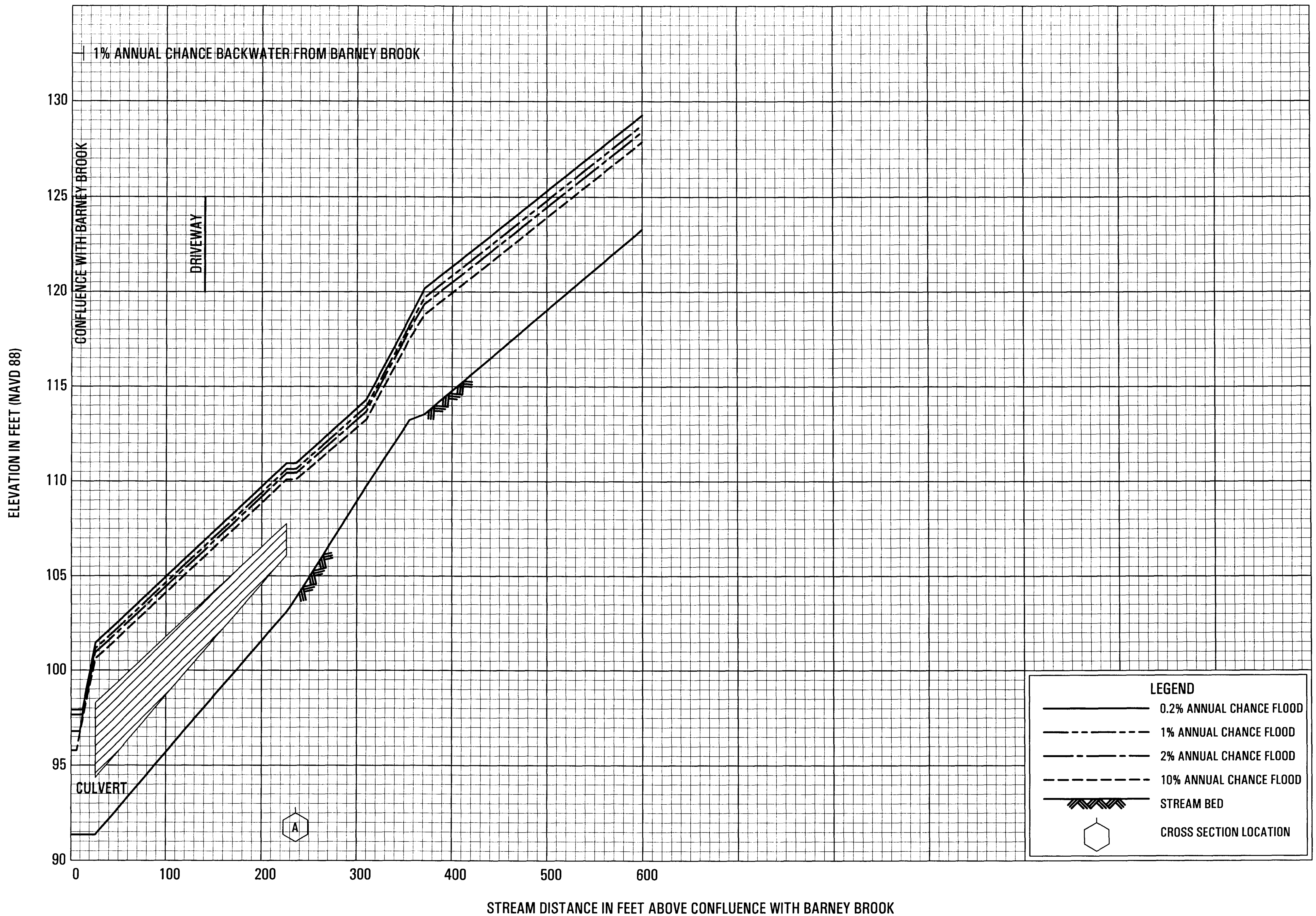
BARNEY BROOK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY

(ALL JURISDICTIONS)

07P



FLOOD PROFILES

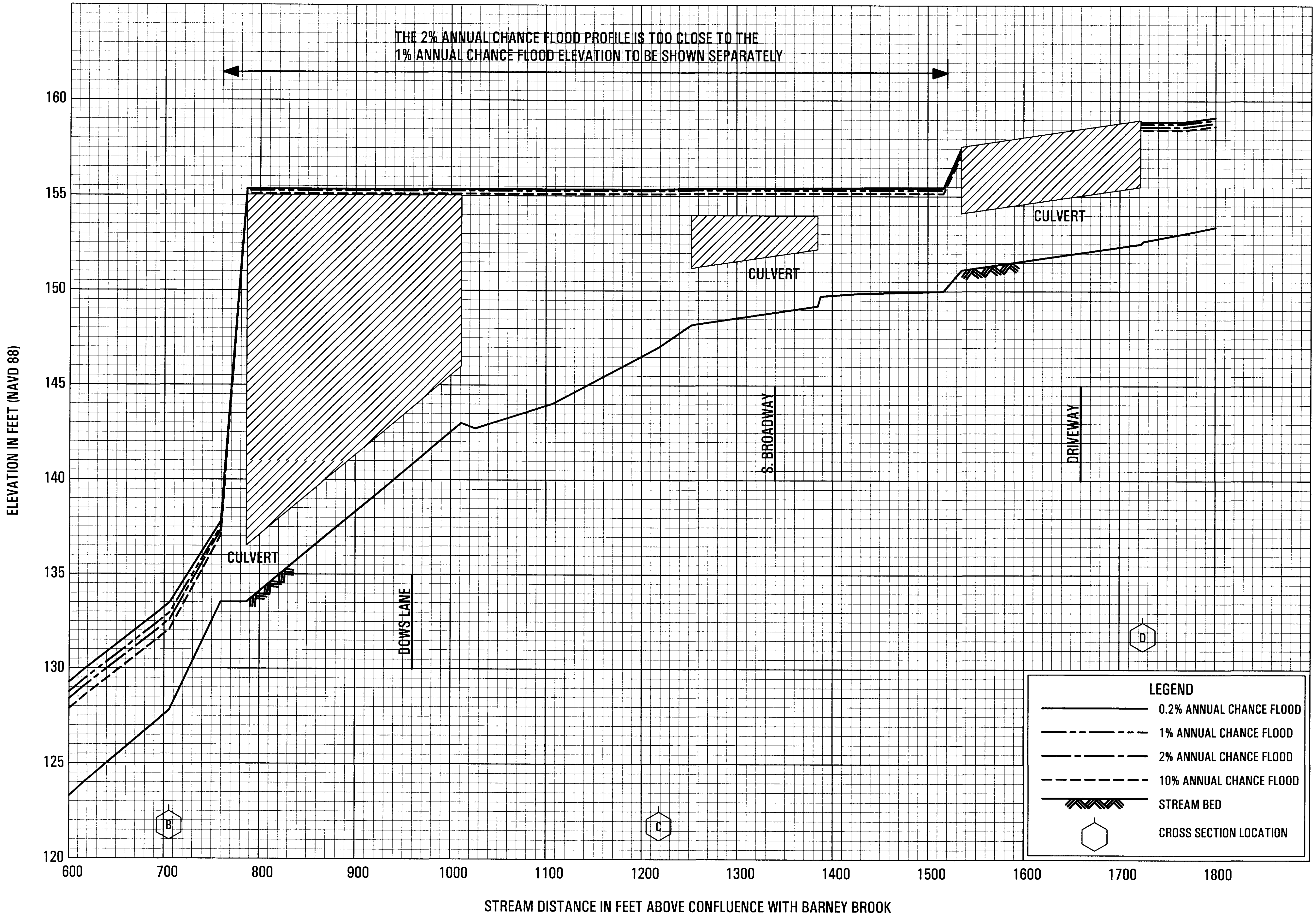
BARNEY BROOK TRIBUTARY

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY

(ALL JURISDICTIONS)

08P



FLOOD PROFILES

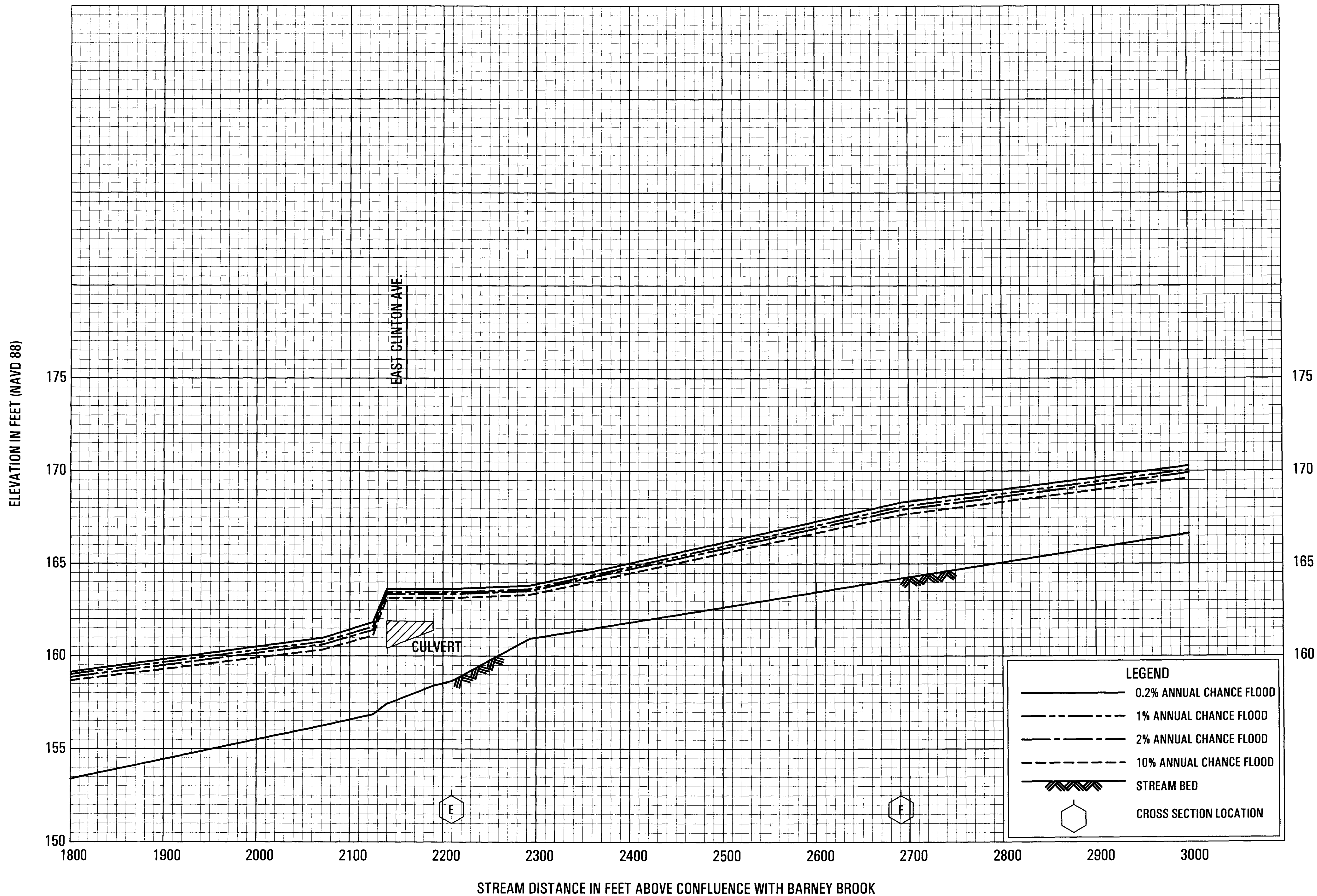
BARNEY BROOK TRIBUTARY

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY

(ALL JURISDICTIONS)

09P



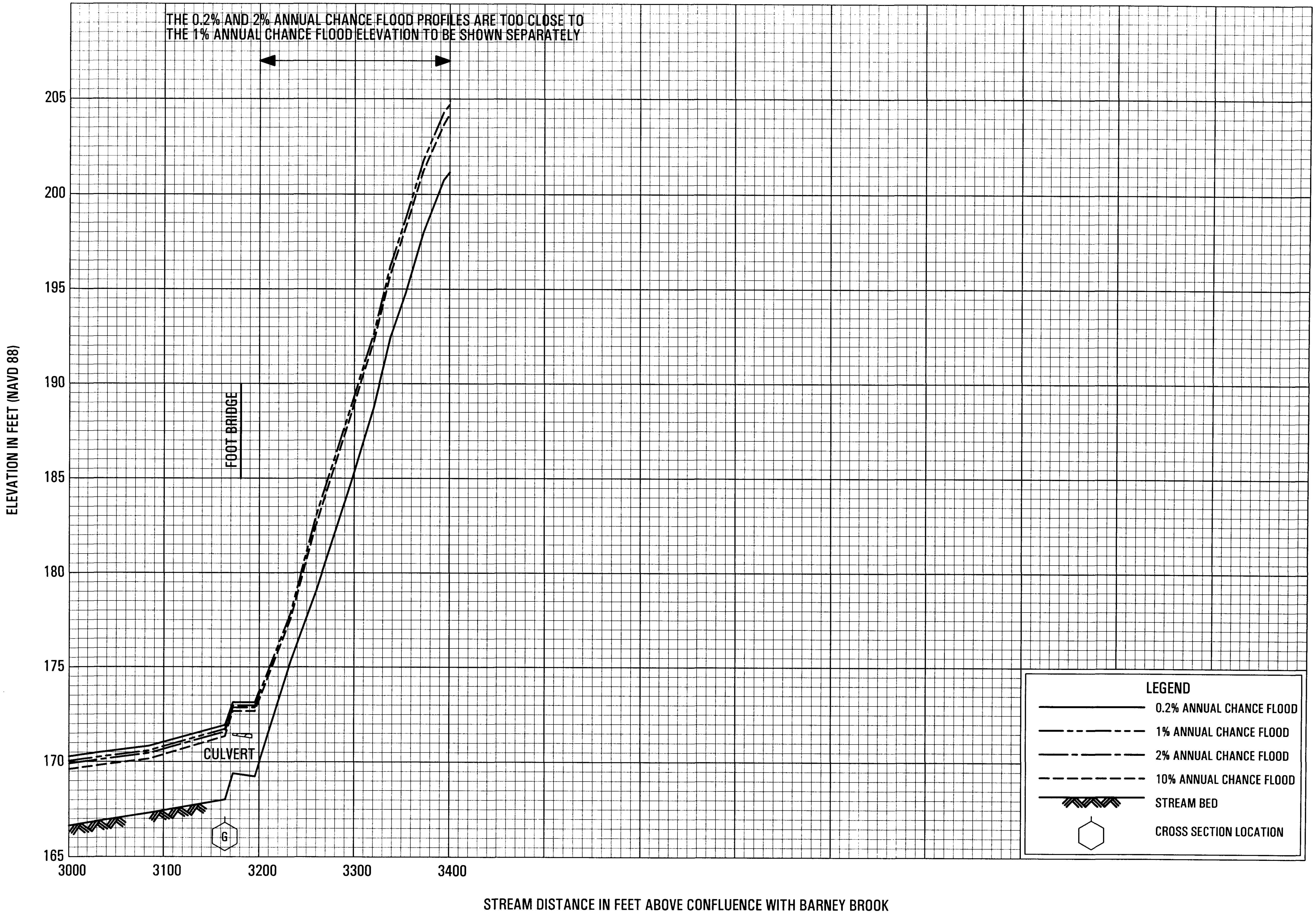
FLOOD PROFILES

BARNEY BROOK TRIBUTARY

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY

(ALL JURISDICTIONS)



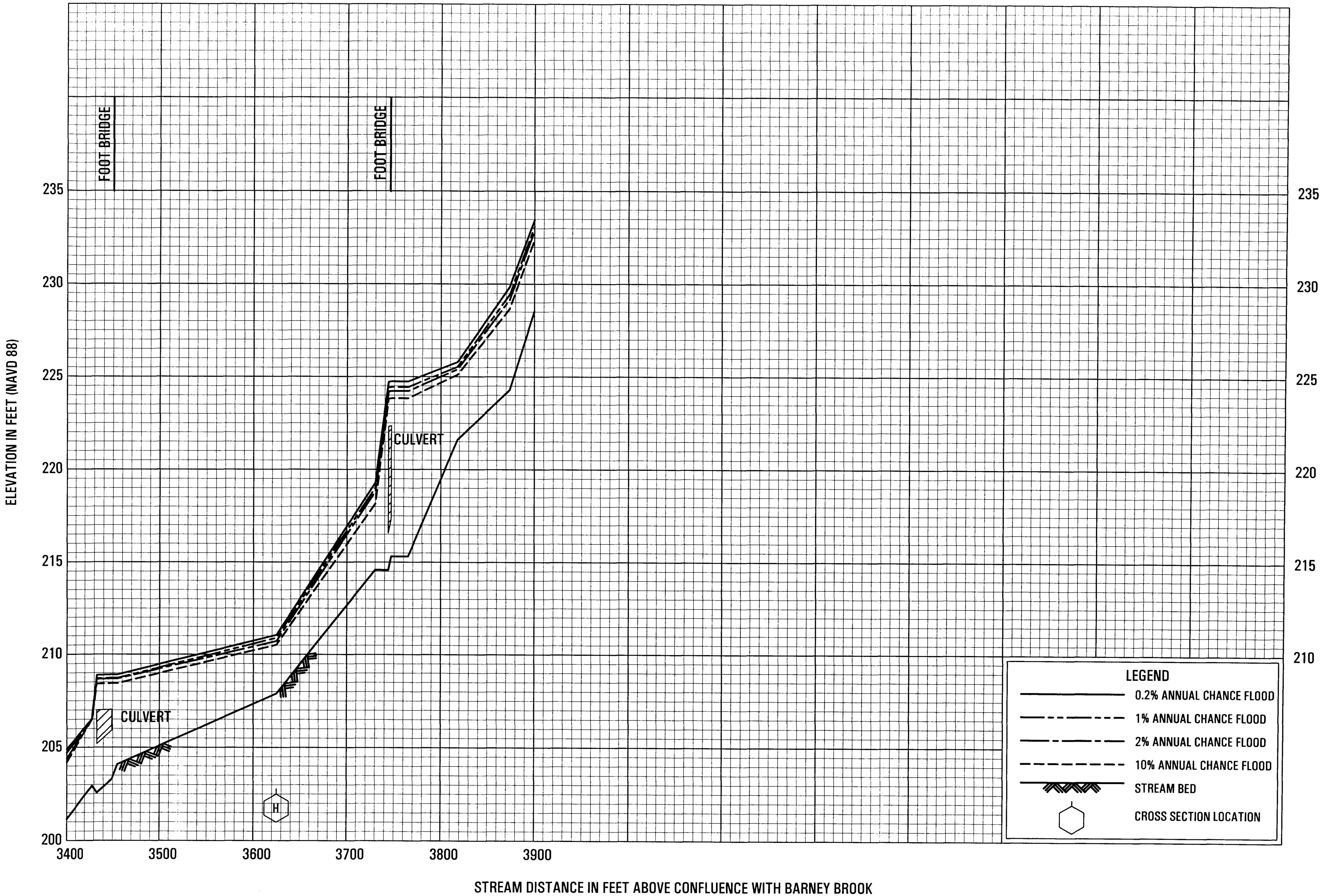
FLOOD PROFILES

BARNEY BROOK TRIBUTARY

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY

(ALL JURISDICTIONS)



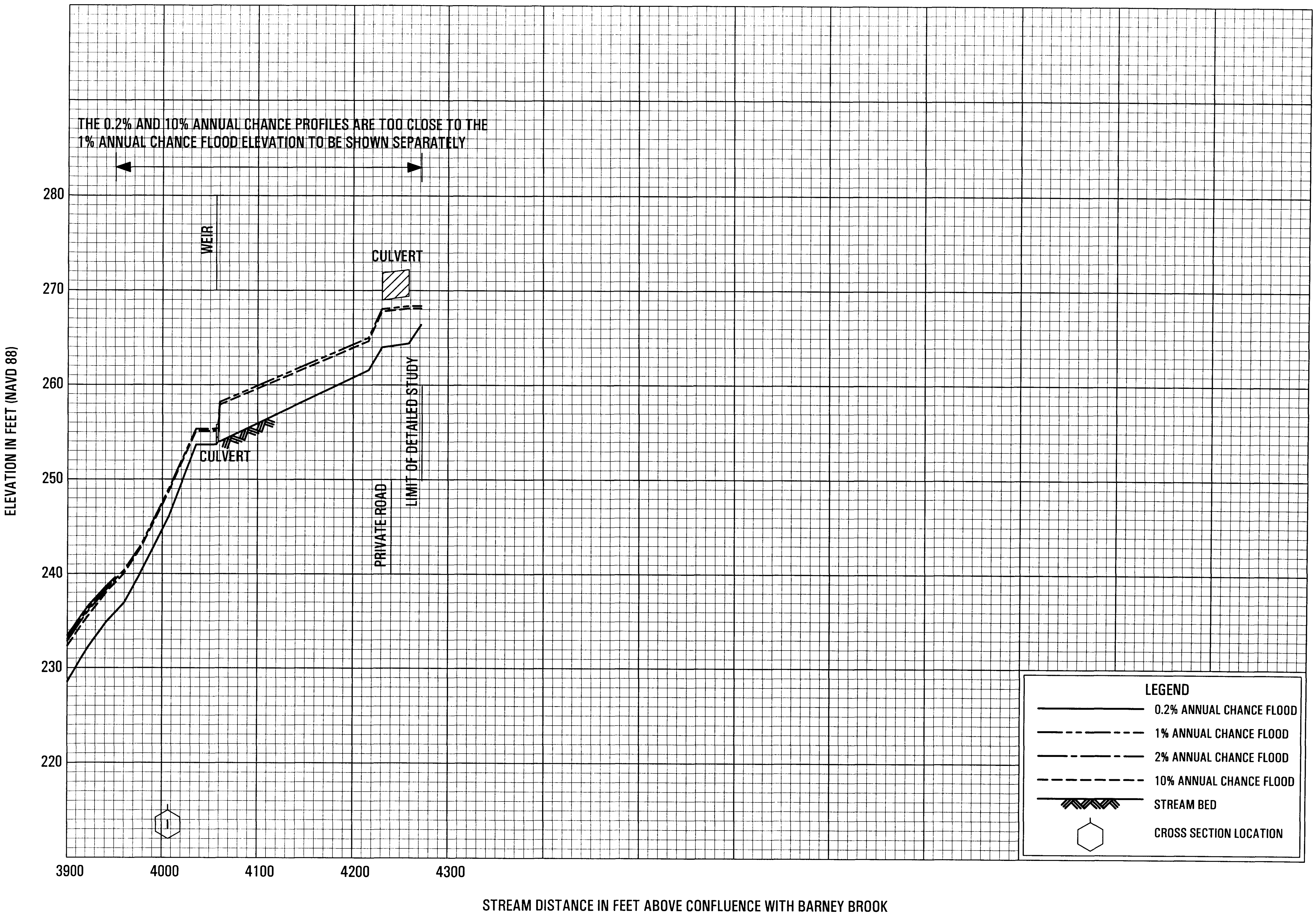
FLOOD PROFILES

BARNEY BROOK TRIBUTARY

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY

(ALL JURISDICTIONS)



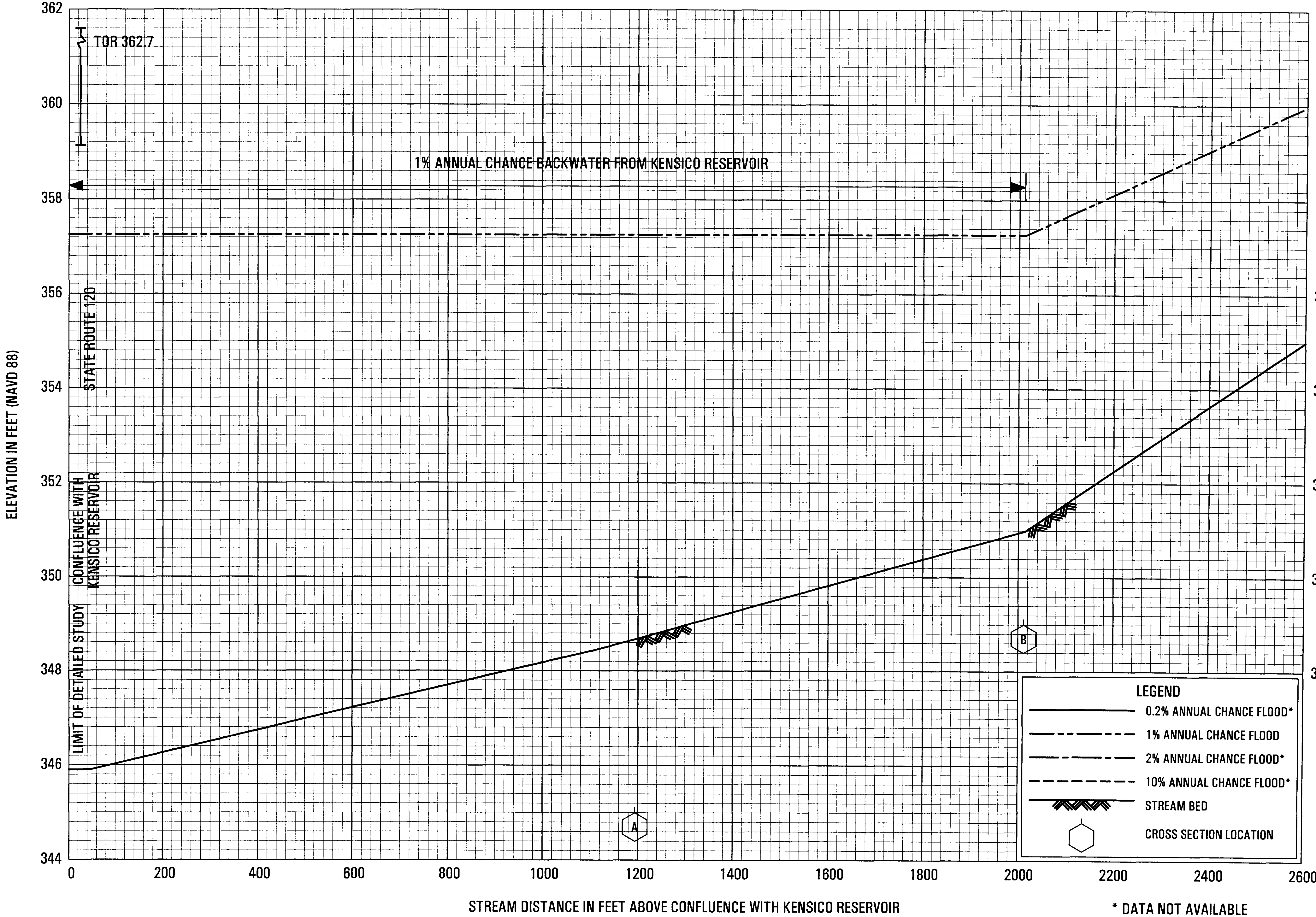
FLOOD PROFILES

BARNEY BROOK TRIBUTARY

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY

(ALL JURISDICTIONS)



* DATA NOT AVAILABLE

FLOOD PROFILES

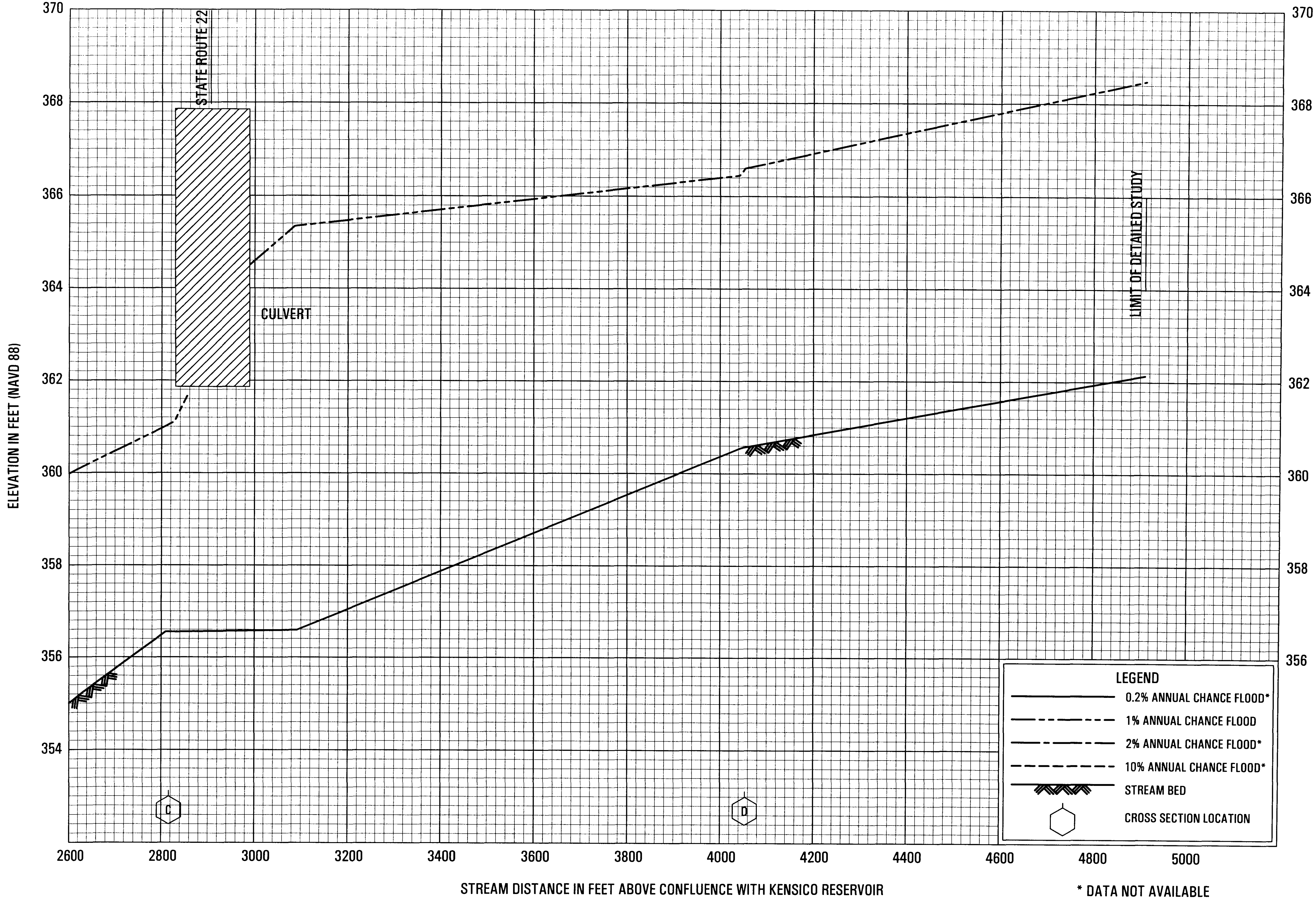
BEAR GUTTER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY

(ALL JURISDICTIONS)

14P



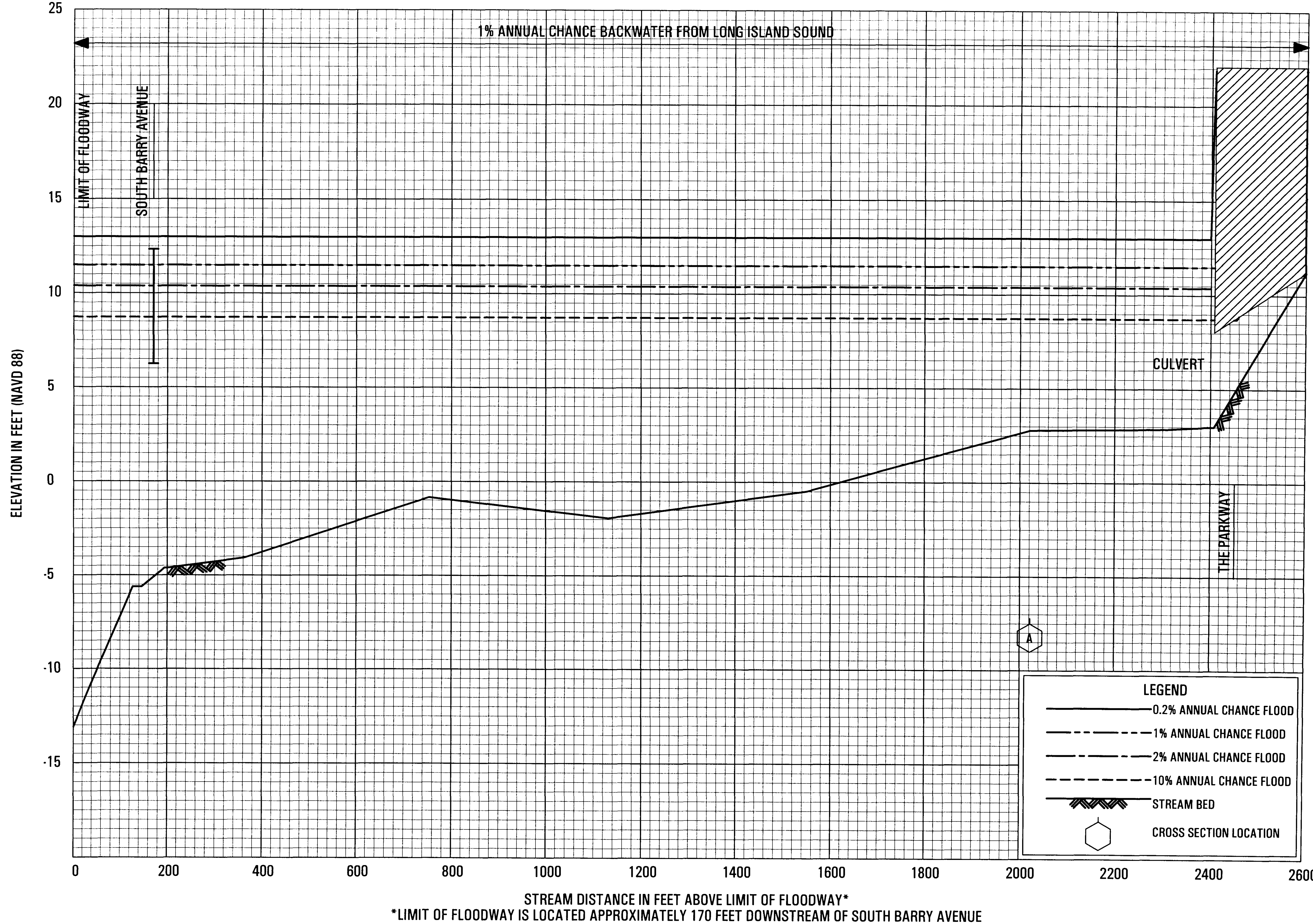
FLOOD PROFILES

BEAR GUTTER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY

(ALL JURISDICTIONS)



FLOOD PROFILES

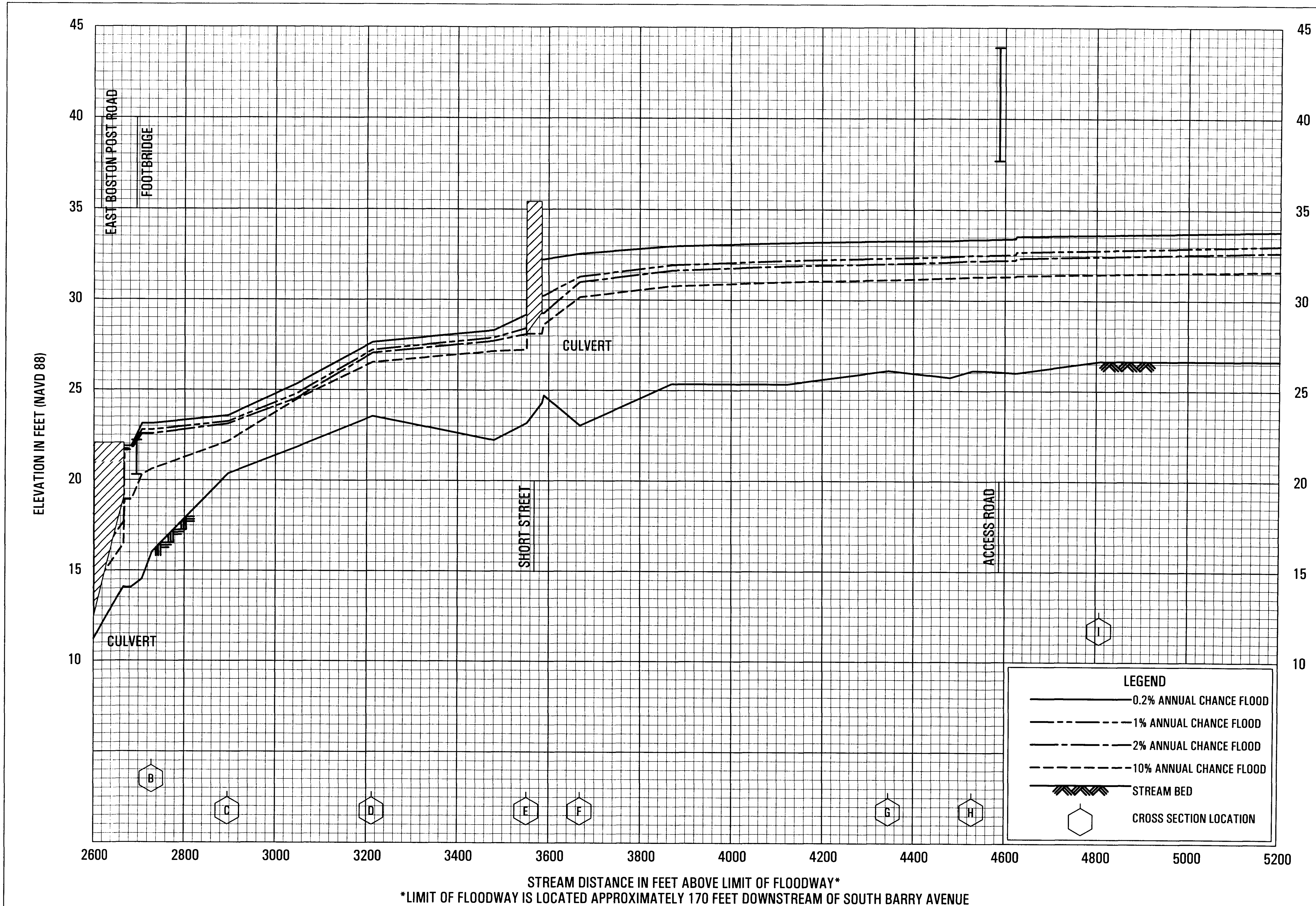
BEAVER SWAMP BROOK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY

(ALL JURISDICTIONS)

16P



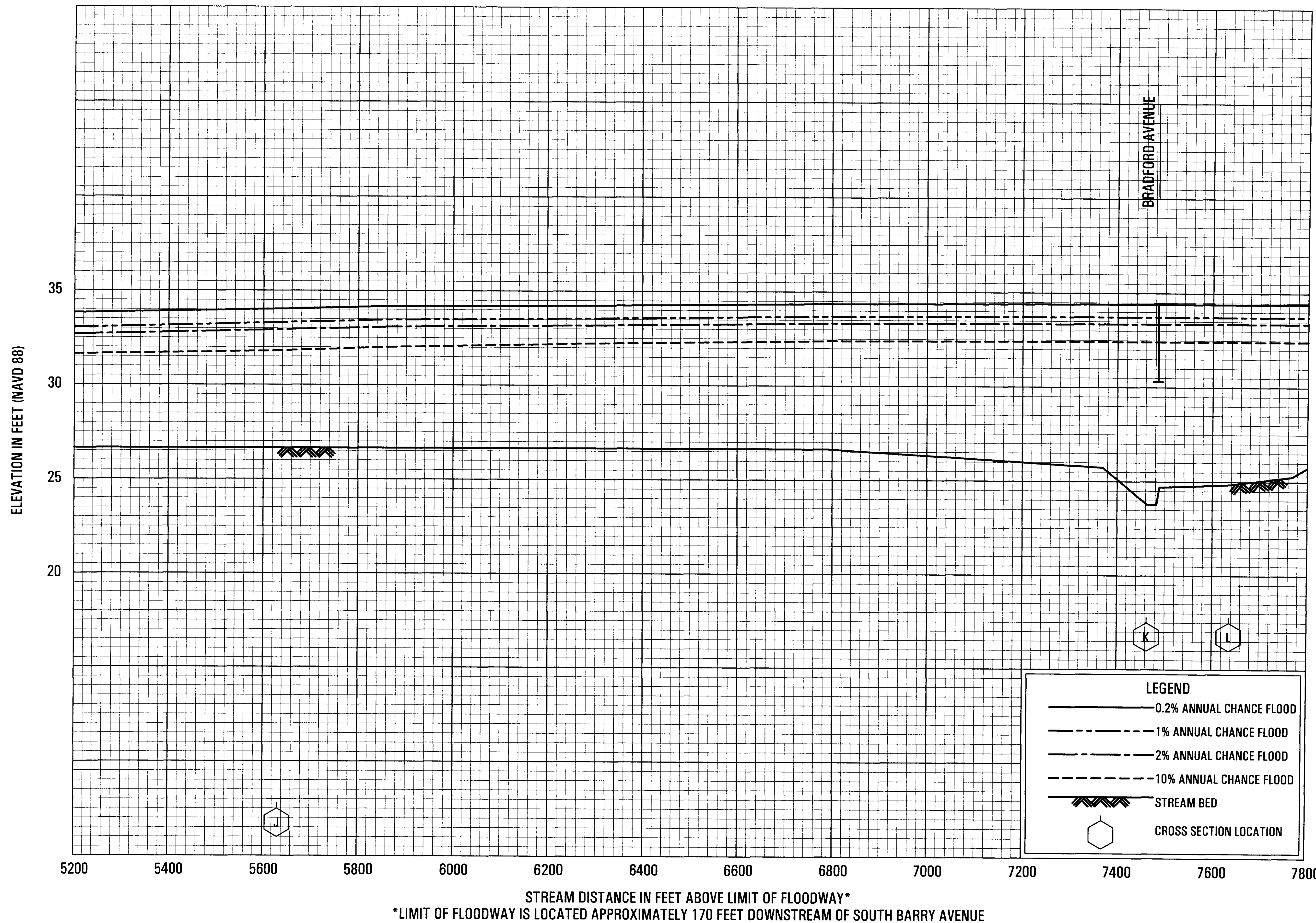
FLOOD PROFILES

BEAVER SWAMP BROOK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY

(ALL JURISDICTIONS)



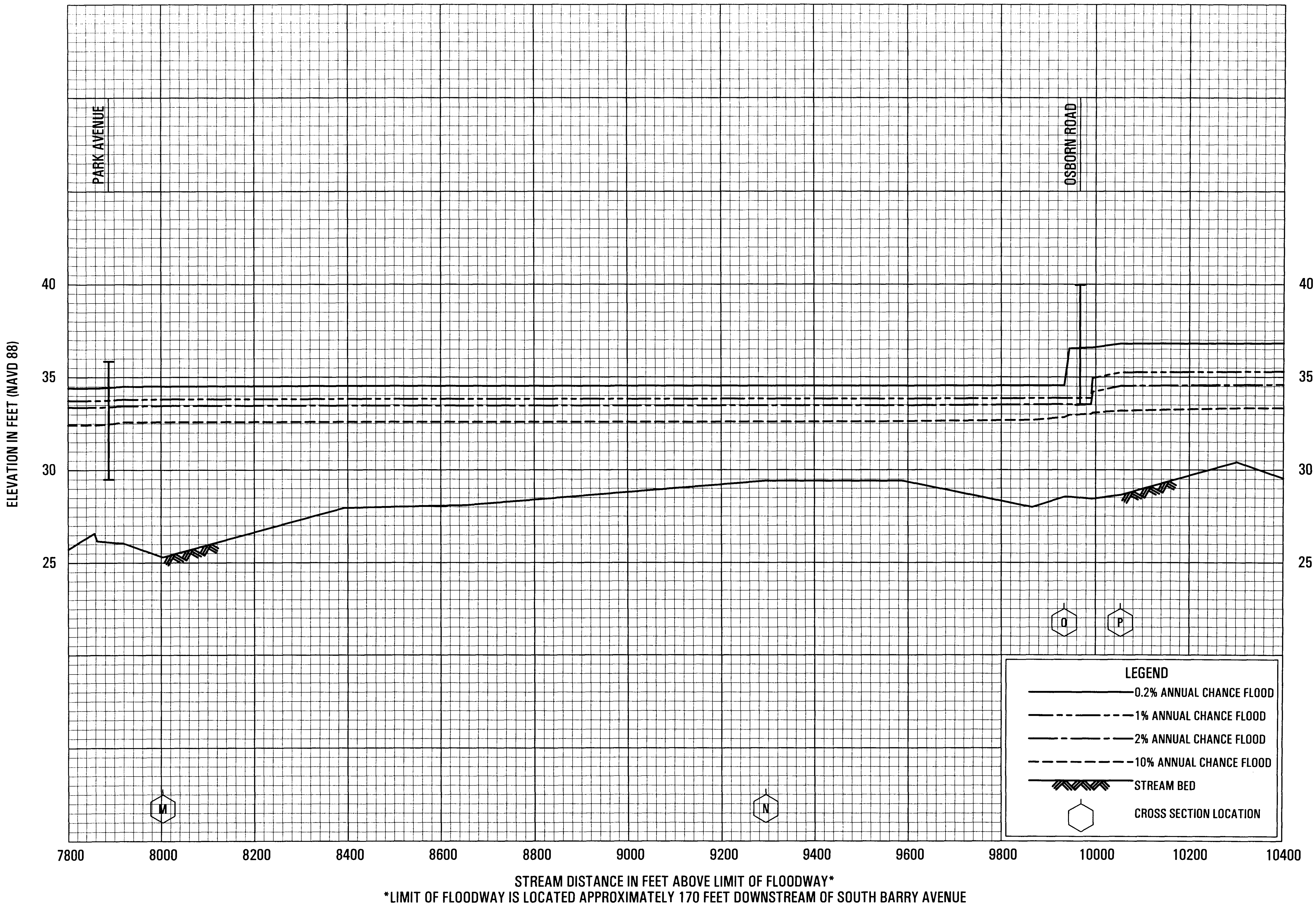
FLOOD PROFILES

BEAVER SWAMP BROOK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY

(ALL JURISDICTIONS)



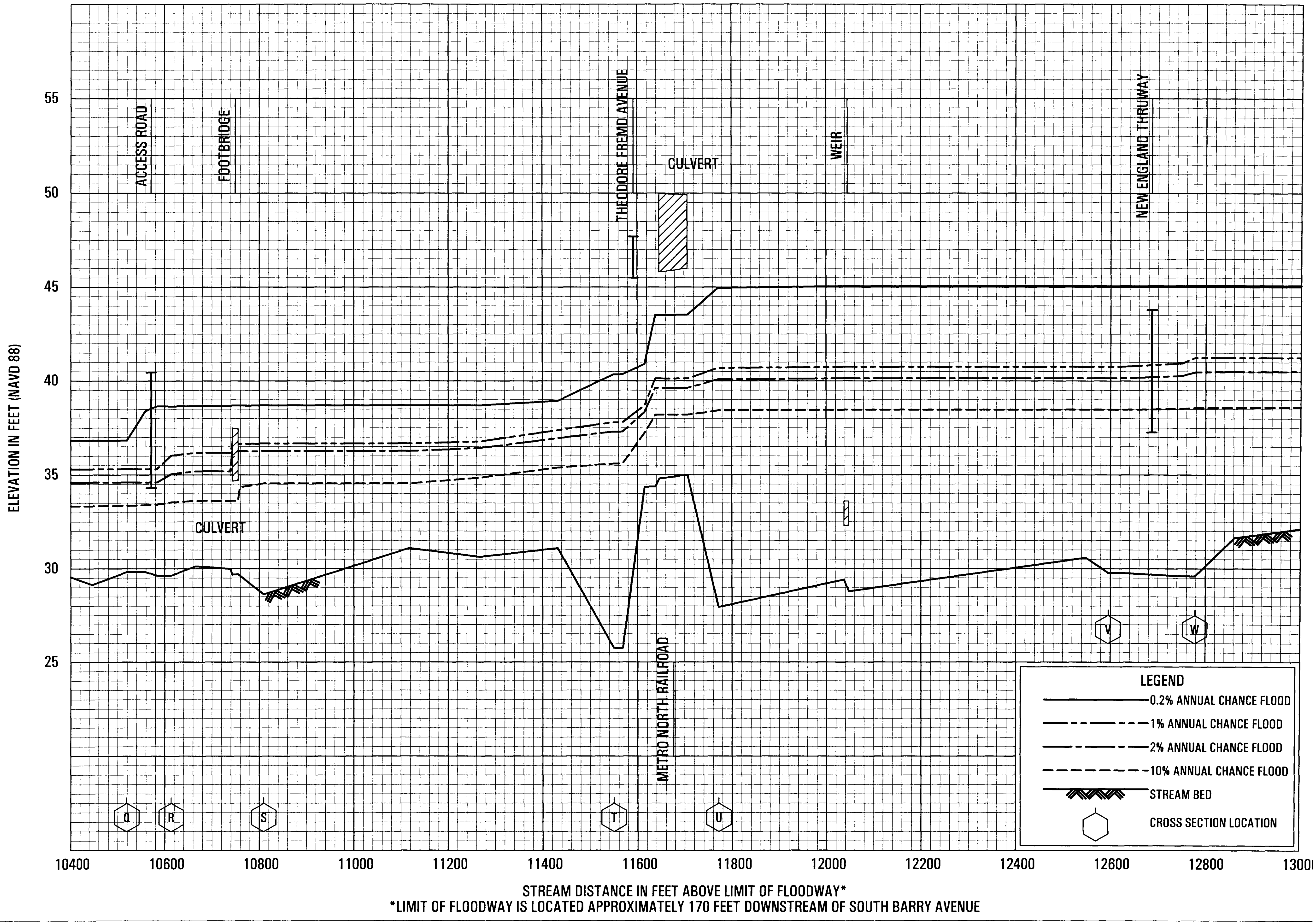
FLOOD PROFILES

BEAVER SWAMP BROOK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY

(ALL JURISDICTIONS)



FLOOD PROFILES

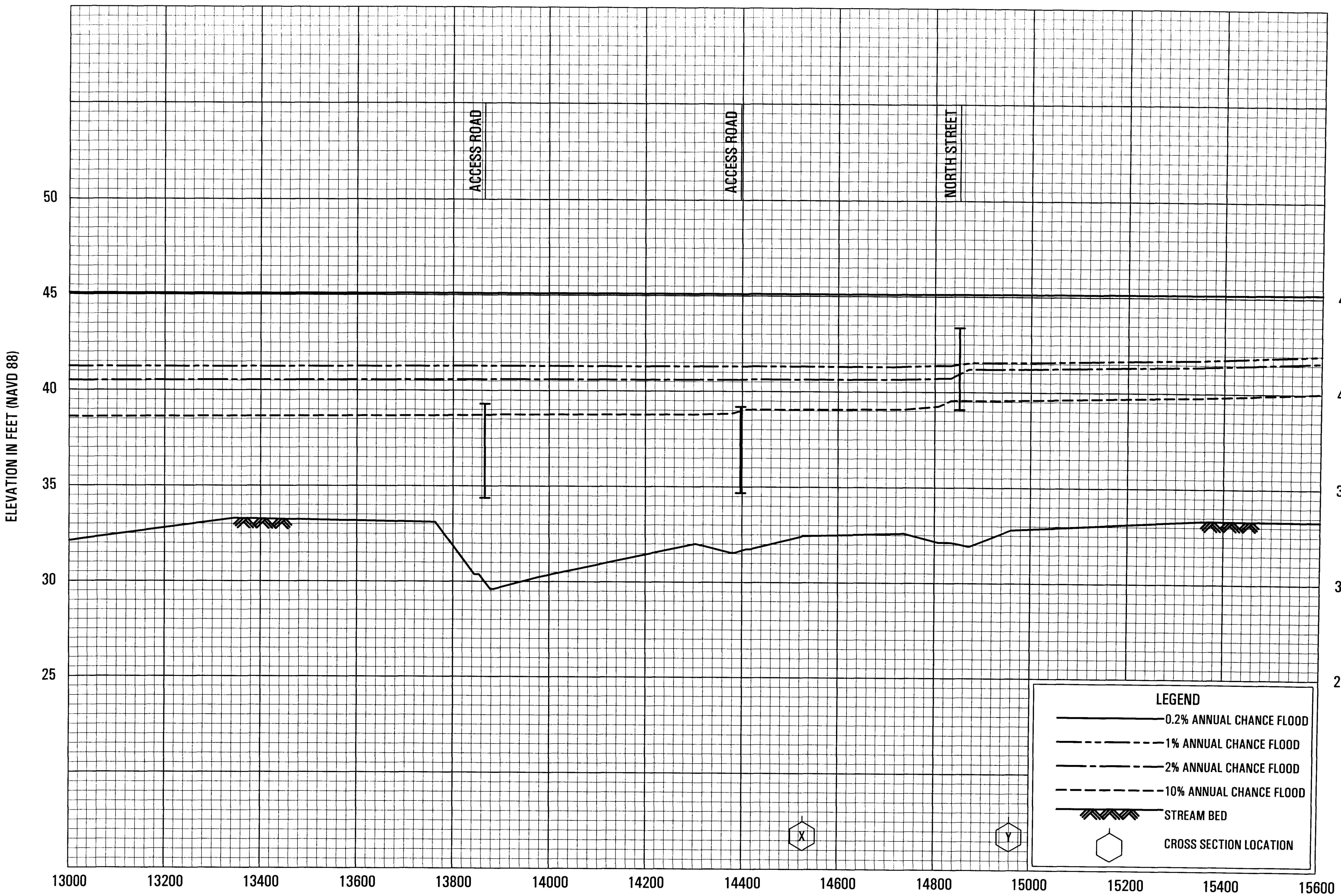
BEAVER SWAMP BROOK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY

(ALL JURISDICTIONS)

20P



STREAM DISTANCE IN FEET ABOVE LIMIT OF FLOODWAY*
*LIMIT OF FLOODWAY IS LOCATED APPROXIMATELY 170 FEET DOWNSTREAM OF SOUTH BARRY AVENUE

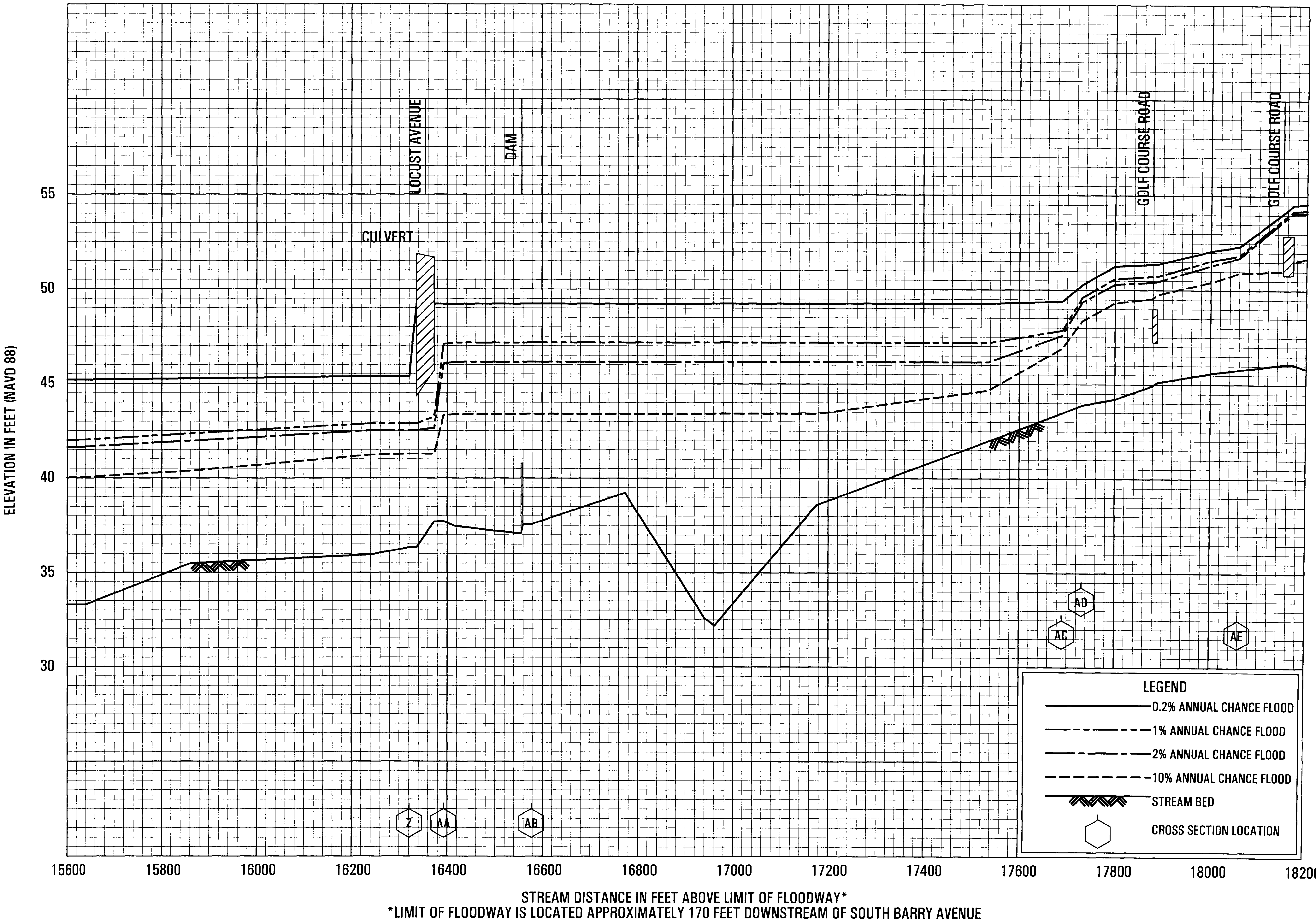
FLOOD PROFILES

BEAVER SWAMP BROOK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY

(ALL JURISDICTIONS)



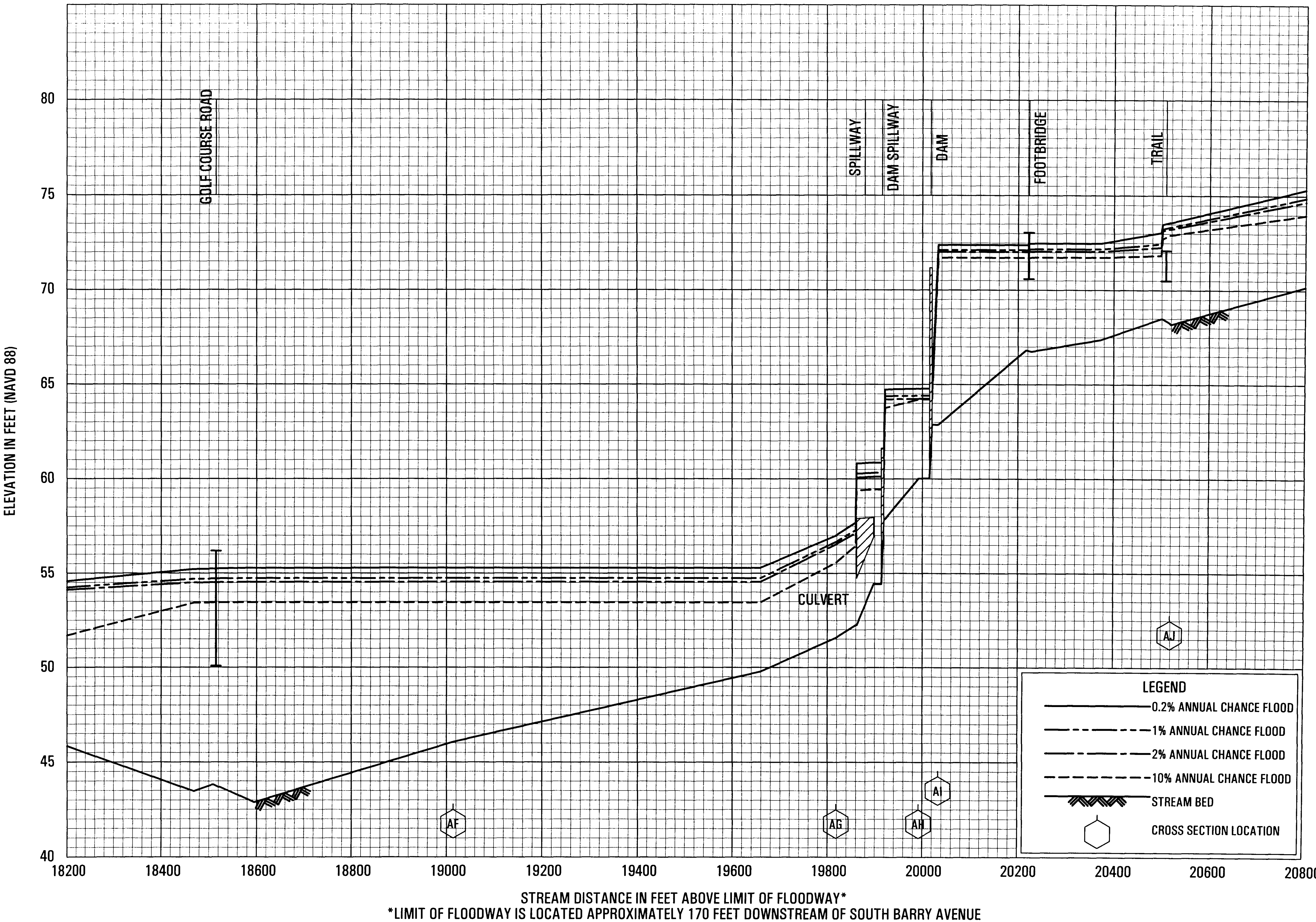
FLOOD PROFILES

BEAVER SWAMP BROOK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY

(ALL JURISDICTIONS)



FLOOD PROFILES

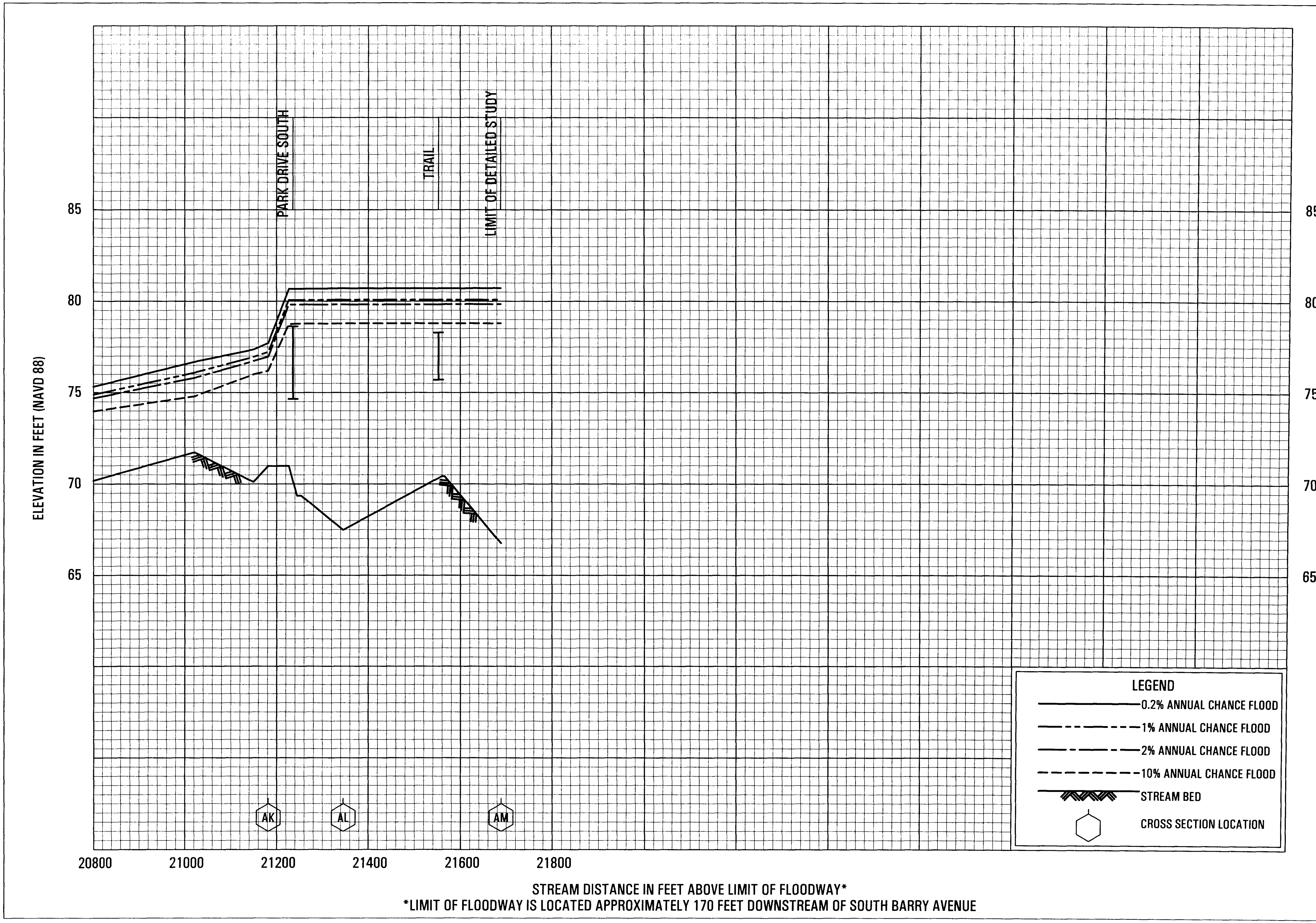
BEAVER SWAMP BROOK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY

(ALL JURISDICTIONS)

23P



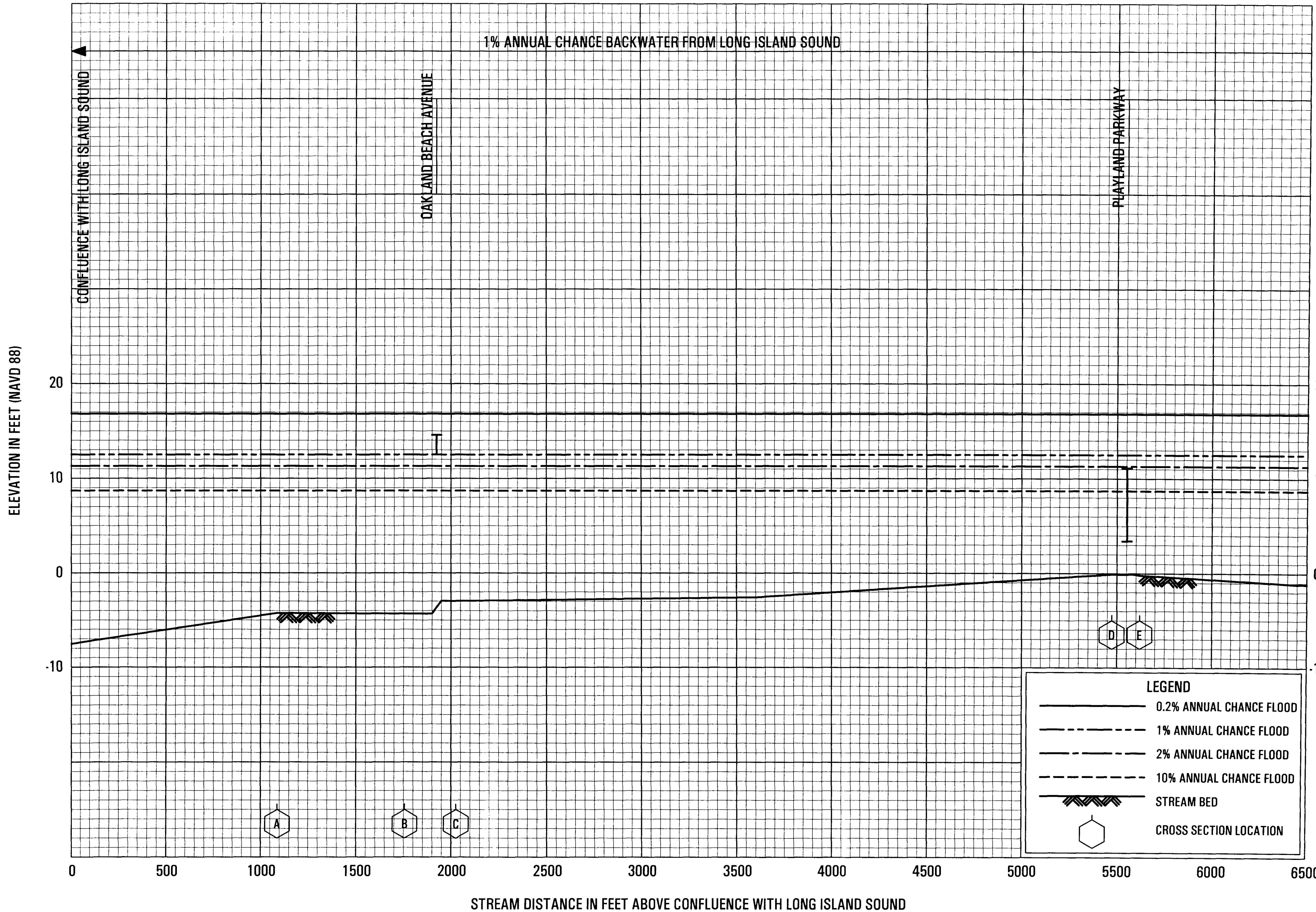
FLOOD PROFILES

BEAVER SWAMP BROOK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY

(ALL JURISDICTIONS)



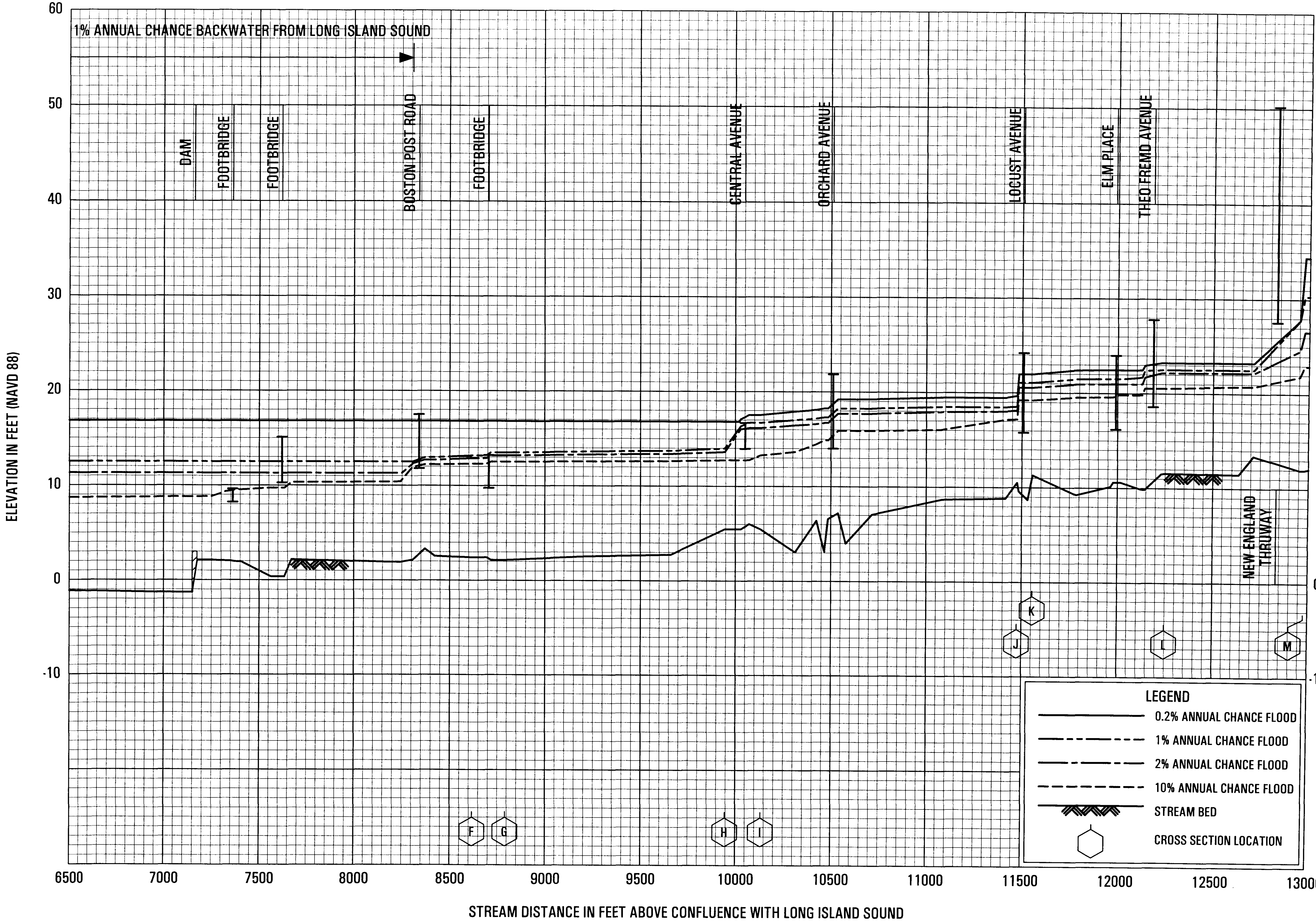
FLOOD PROFILES

BLIND BROOK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY

(ALL JURISDICTIONS)



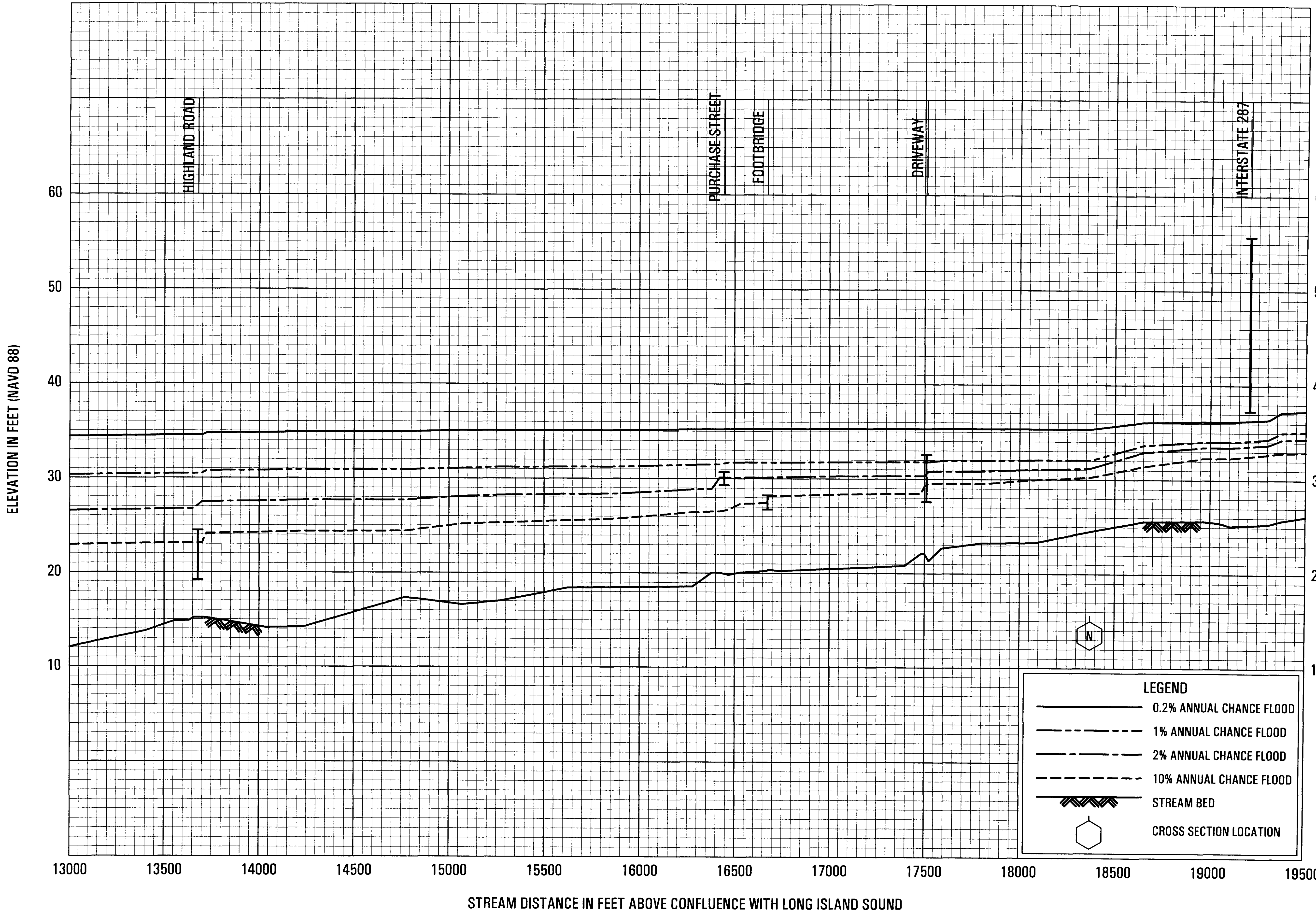
FLOOD PROFILES

BLIND BROOK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY

(ALL JURISDICTIONS)



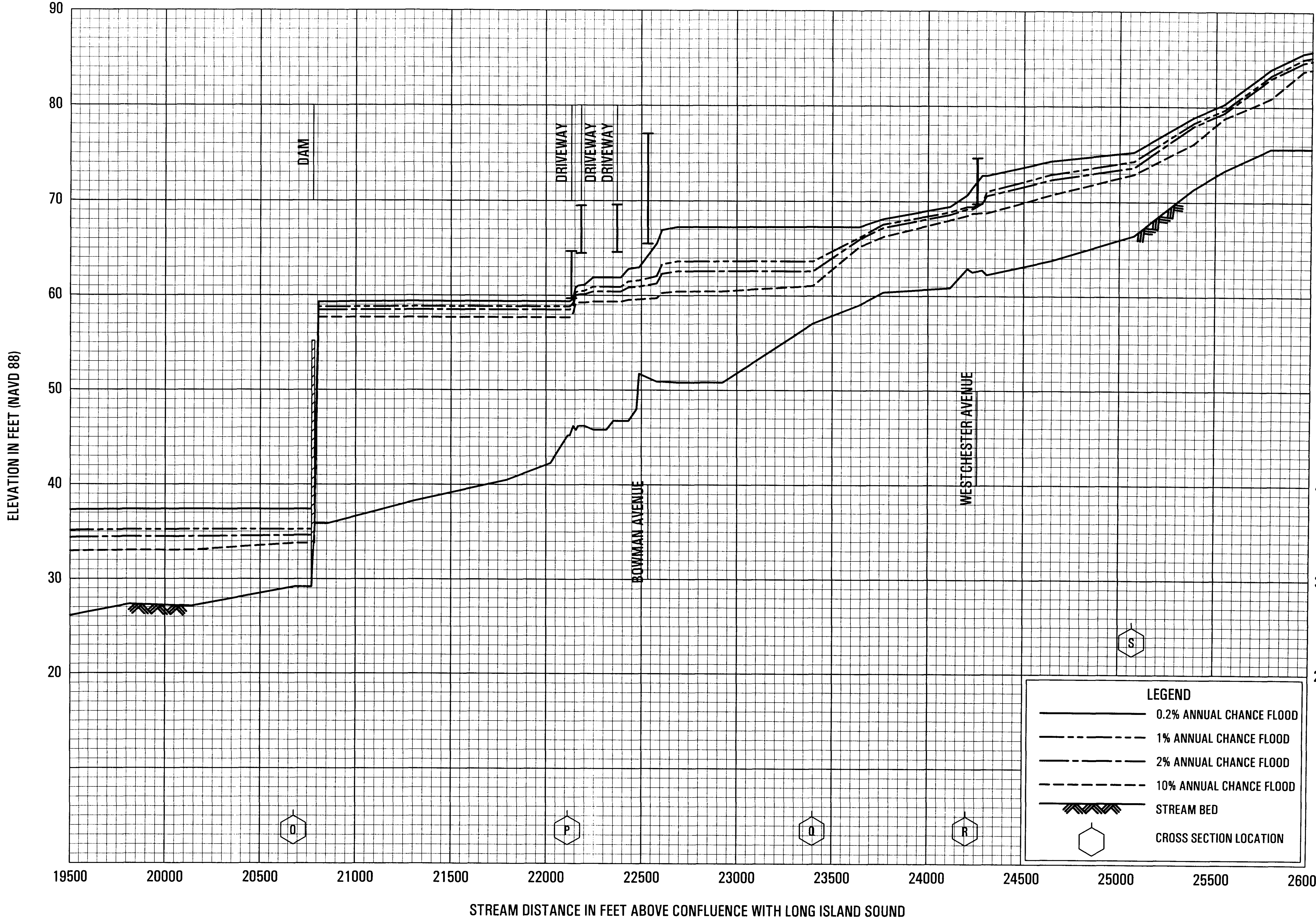
FLOOD PROFILES

BLIND BROOK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY

(ALL JURISDICTIONS)



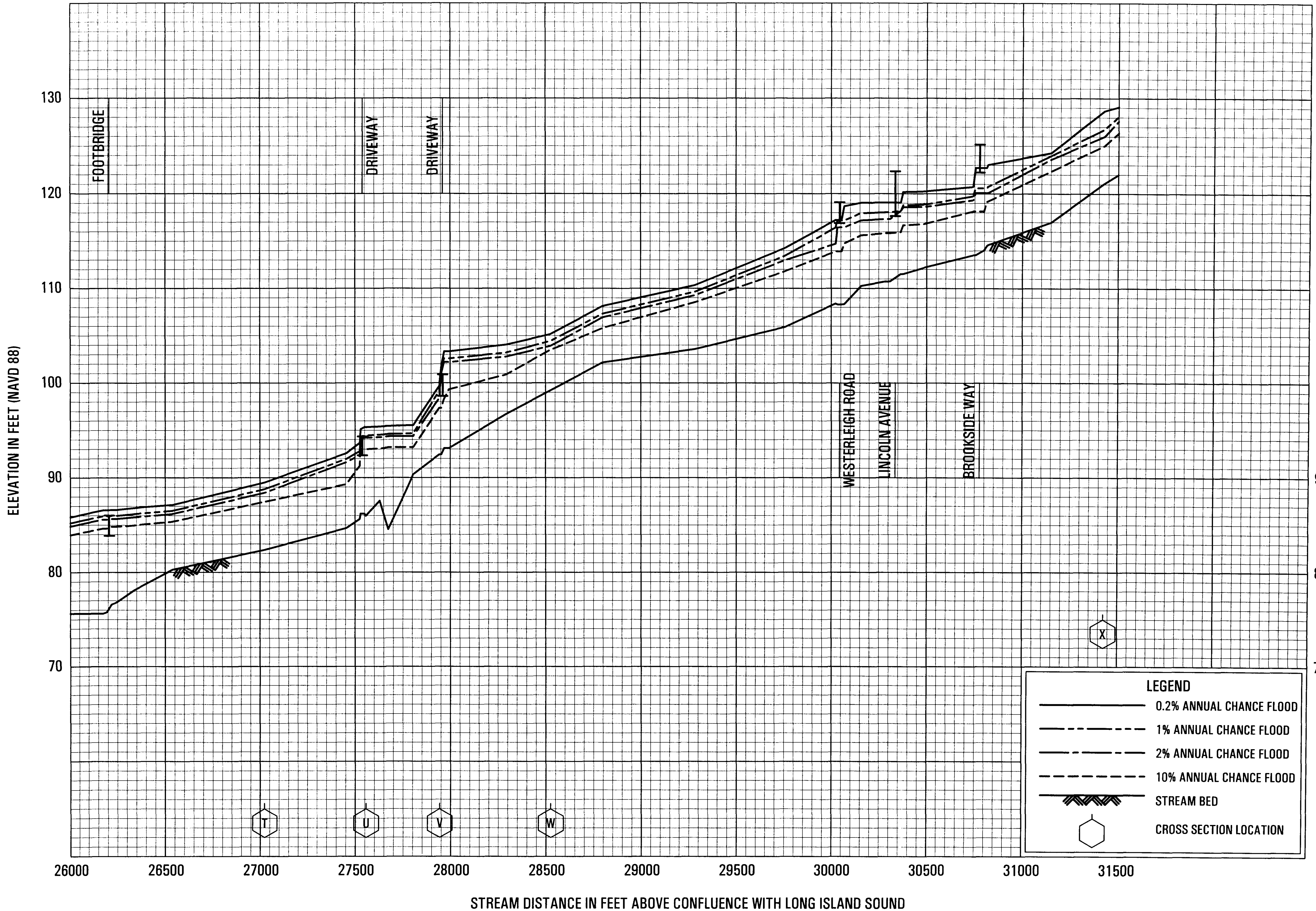
FLOOD PROFILES

BLIND BROOK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY

(ALL JURISDICTIONS)



FLOOD PROFILES

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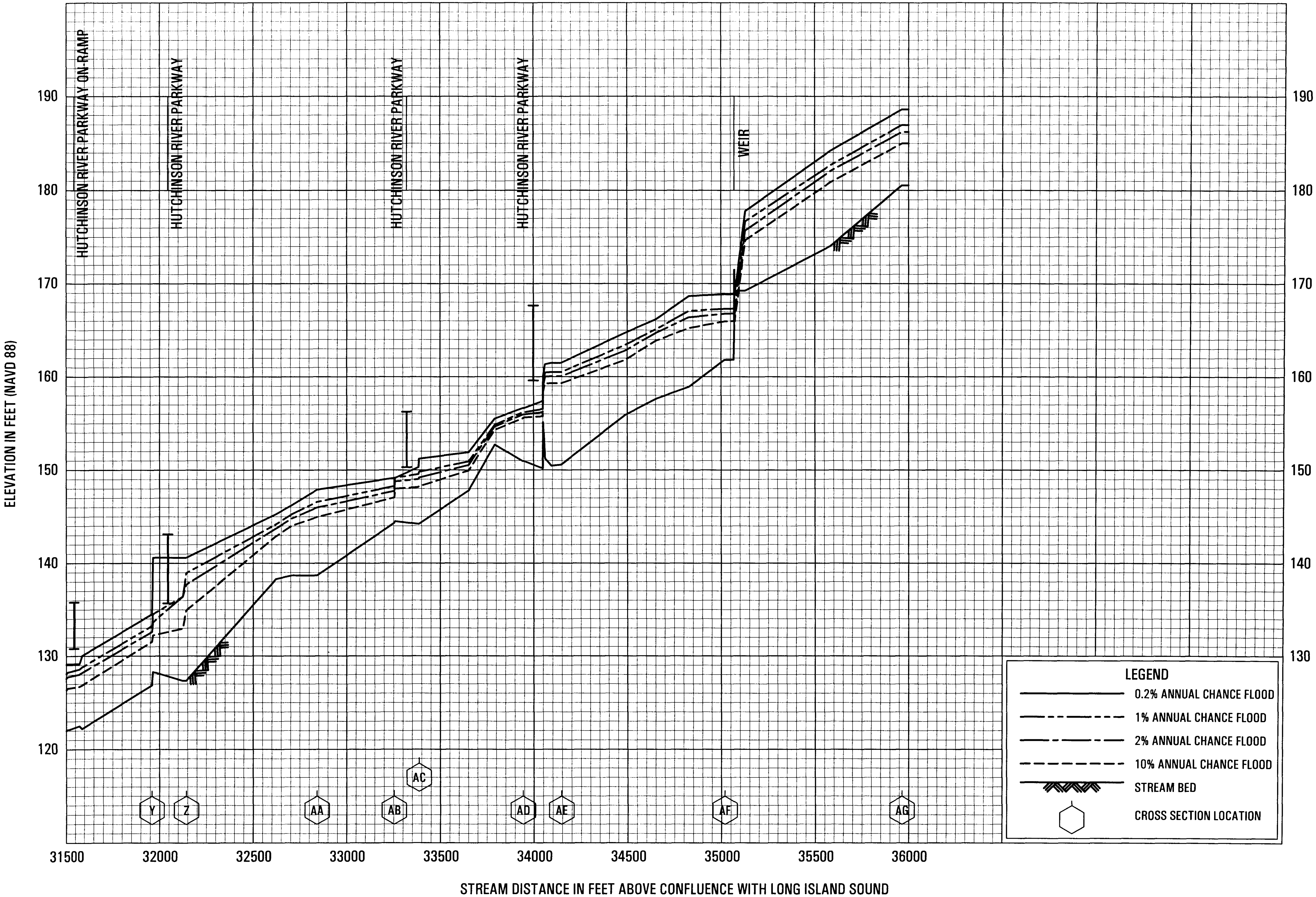
FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY

(ALL JURISDICTIONS)



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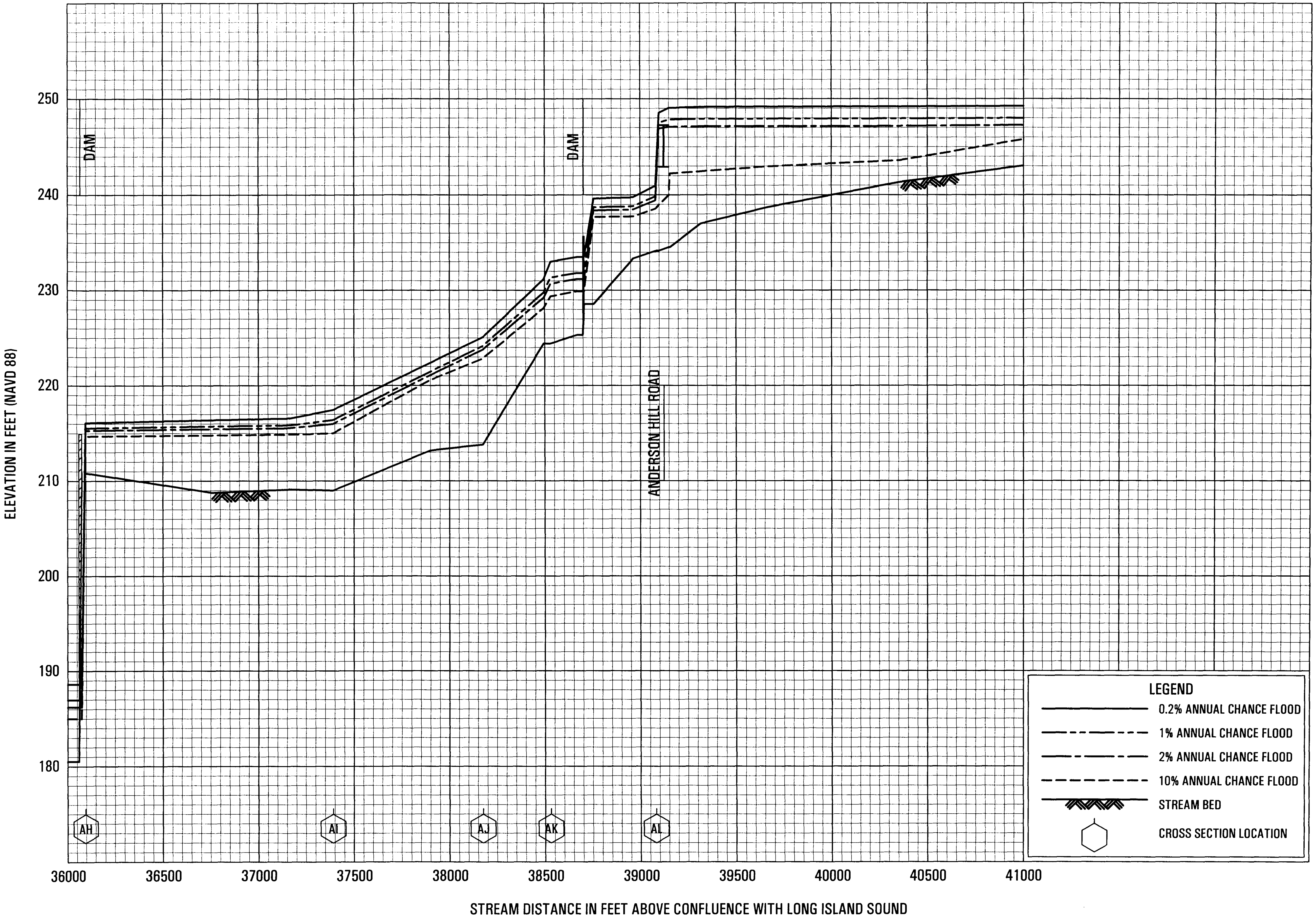

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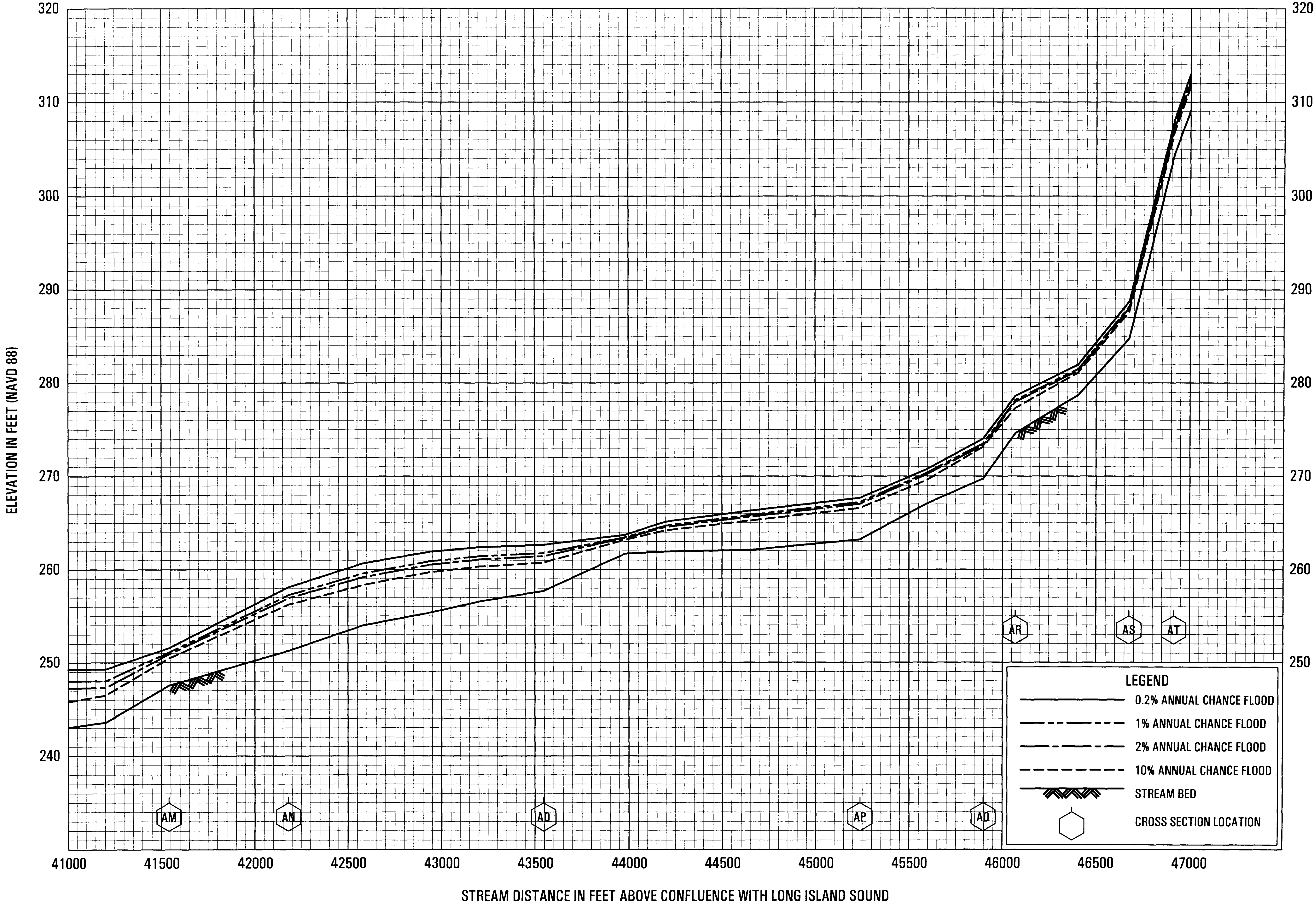

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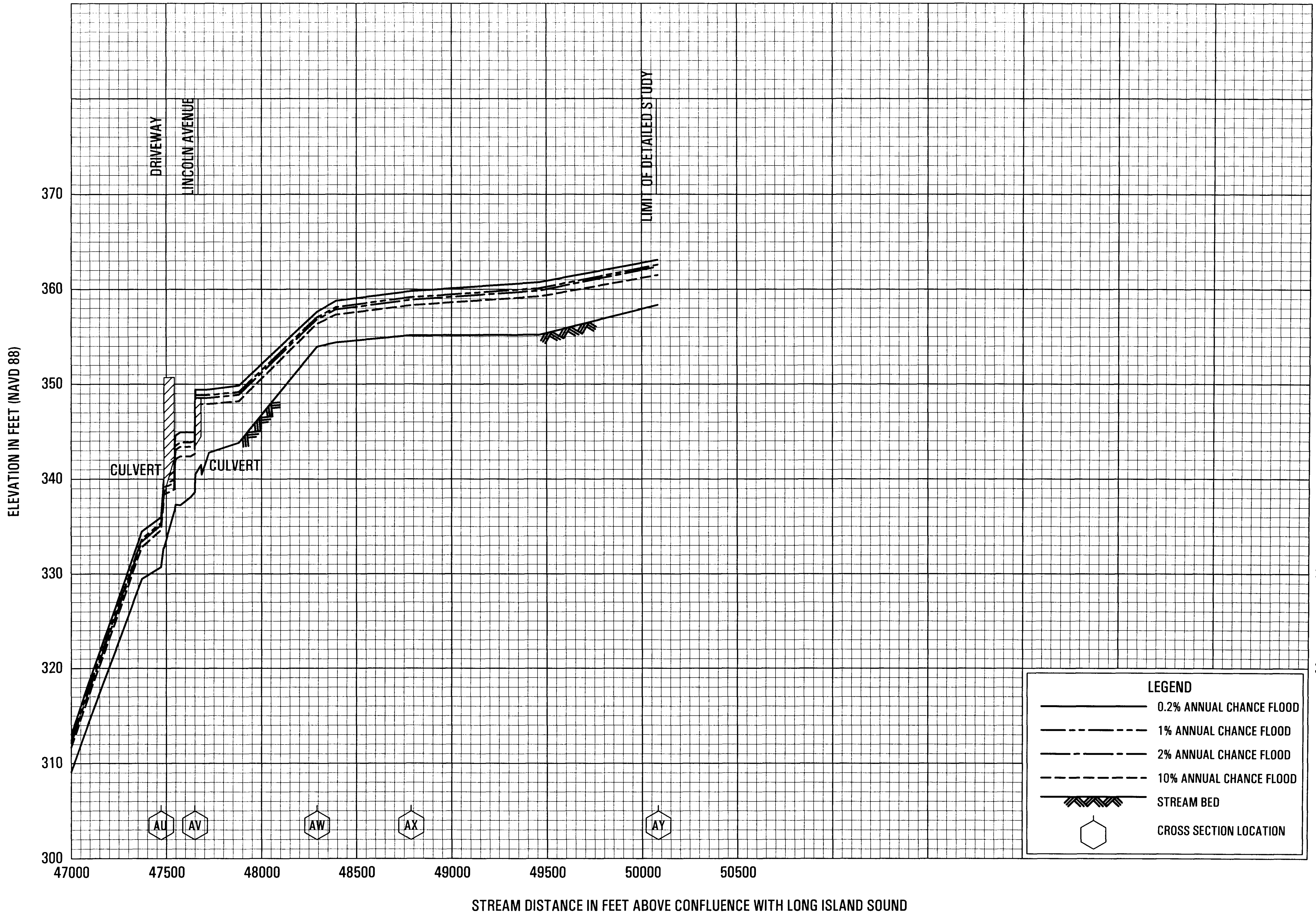

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